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PROCEEDINGS

OF THE

Biological Society of Washington

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PUBLICATION NOTE

By a change in the By-Laws of the Biological Society of Washington, effective March 27, 1926, the fiscal year now begins in May, and the officers will henceforth hold office from May to May. This, however, will make no change in the volumes of the Proceedings, which will continue to coincide with the calendar year. In order to furnish desired information, the title page of the current volume and the list of newly elected officers and committees will hereafter be published soon after the annual election in May.

PRESS OF
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(FOR 1926-1927)

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The Committee on Publications declares that each paper of this volume was distributed on the date indicated on its initial page. The Index and minutes of proceedings for 1926 (pp. vii-xi; 147-149) were issued on March 5, 1927. The title page and lists of officers and committees for 1926-1927 (pp. i-iv) were issued on July 30, 1926.

PLATES

- I. Facing p. 72. *Listroderes apicalis* (fig. 1), *Listroderes obliquus* (fig. 2).
- II. Facing p. 118. Antennae, wings, etc., of Aphididae.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

PROCEEDINGS.

The Society meets from October to May, on alternate Saturdays, at 8 P. M. All meetings during 1926 were held in the new lecture hall of the Cosmos Club, except the joint meeting of April 10, which was held at the National Museum.

January 16, 1926—686th Meeting.¹

President Oberholser in the chair; 103 persons present.

The President announced the membership of the following committees: Committee on Publications, C. W. Richmond, Chairman, J. H. Riley, G. S. Miller, Jr.; Committee on Communications, W. R. Maxon, Chairman, S. A. Rohwer, V. Bailey.

Formal communications: O. J. Murie, on the trail of the big brown bear in Alaska; C. E. Chambliss, An unused southern wild food plant; J. W. Gidley, Fossil man associated with the mammoth in Florida; new evidence of the antiquity of man in America.

January 30, 1926—687th Meeting.²

President Oberholser in the chair, 106 persons present.

New members elected: W. H. Ball, H. L. Stoddard.

Informal communication: T. S. Palmer, Announcement of the Sixth International Ornithological Congress.

Formal communications: H. W. Brandt, A naturalist in Alaska; A. S. Hitchcock, The grasses of Alaska, their distribution and relationship.

¹ Abstract in Journ. Washington Acad. Sci., vol. 16, p. 309-310, June 4, 1926.

² Abstract in Journ. Washington Acad. Sci., vol 16., p. 311-312, June 4, 1926.

February 13, 1926—688th Meeting.¹

President Oberholser in the chair; 63 persons present.

New member elected: F. A. Varrelman.

Informal communications: A. Wetmore, Occurrence of the long-eared owl near Washington; A. S. Hitchcock, The life of Aimé Bonpland.

Formal communications: C. W. Stiles and M. B. Orleman, An attempt to untangle man and the higher apes; E. R. Kalmbach, Blackbirds *vs.* rice in Louisiana.

February 27, 1926—689th Meeting.²

President Oberholser in the chair; 53 persons present.

New members elected: S. T. Danforth, F. C. Hottes, P. H. Oehser.

Formal communications: C. W. Gilmore, Remarks on fossil tracks from the Grand Canyon; W. L. Schmitt, Collecting invertebrates in South America.

March 13, 1926—690th Meeting.³

President Oberholser in the chair; 68 persons present.

New member elected: J. P. Holman.

Informal communications: T. S. Palmer, Note on the death of the wintering Brazilian cardinal; P. Bartsch, Mockingbird eating suet.

Formal communications: J. C. Phillips, Introducing foreign and American birds into new localities; P. Bartsch, Some experiences with the birds of the Dry Tortugas.

March 27, 1926—691st Meeting.⁴

President Oberholser in the chair; 80 persons present.

New members elected: Mrs. May C. Williams Settle, Col. R. Meinertzhagen.

Changes were adopted in Art. II, Par. 1; Art. III, Par. 1; Art. IV, Par. 6; and Art. V of the By-laws.

Informal communication: T. S. Palmer, Spring appearance of the box turtle.

¹Abstract in Journ. Washington Acad. Sci., vol. 16, p. 312-313, June 4, 1926.

²Abstract in Journ. Washington Acad. Sci., vol. 16, p. 313-315, June 4, 1926.

³Abstract in Journ. Washington Acad. Sci., vol. 16, p. 342-344, June 19, 1926.

⁴Abstract in Journ. Washington Acad. Sci., vol. 16, p. 428-430, September 19, 1926.

Formal communications: E. P. Walker, The wild life of Alaska and its protection; E. T. Wherry, Exploring for wild flowers in the Gulf States.

April 10, 1926—692d Meeting.¹

Joint meeting with Audubon Society of the District of Columbia.

President T. S. Palmer (Audubon Society) in the chair; 200 persons present.

Formal communications: A. O. Gross, The threatened extinction of the heath hen on Martha's Vineyard; A. O. Gross, The jungle life of Panama.

April 24, 1926—693d Meeting.²

President Oberholser in the chair; 61 persons present.

New members elected: J. O. Maloney, S. P. Baldwin (life member).

Informal communications: C. W. Townsend, An ornithological trip through the Southern States; A. Wetmore, The egg of California Condor laid at the Zoological Park.

Formal communications: S. P. Baldwin, Intensive study of the life history of birds; S. P. Baldwin, Life history of the house wren.

May 8, 1926—694th Meeting.³

47th Annual Meeting.

President Oberholser in the chair; 20 persons present.

The annual reports of the Recording Secretary, Corresponding Secretary, Treasurer, and Committee on Publications were presented.

New members elected: F. R. Hagner, T. Gilbert Pearson.

The following officers and members of the council were elected: *President*, H. C. Oberholser; *Vice-Presidents*, E. A. Goldman, A. Wetmore, C. E. Chambliss, H. H. T. Jackson; *Recording Secretary*, S. F. Blake; *Corresponding Secretary*, T. E. Snyder; *Treasurer*, F. C. Lincoln; *Members of Council*, H. C. Fuller, W. R. Maxon, C. W. Stiles, A. A. Doolittle, B. H. Swales.

¹Abstract in Journ. Washington Acad. Sci., vol. 16, p. 430, September 19, 1926.

²Abstract in Journ. Washington Acad. Sci., vol. 16, p. 455-456, October 4, 1926.

³Abstract in Journ. Washington Acad. Sci., vol. 16, p. 456, October 4, 1926.

October 23, 1926—695th Meeting.¹

President Oberholser in the chair; 180 persons present.

Informal communications: A. Wetmore, The 44th meeting of the American Ornithologists' Union, at Ottawa; C. W. Stiles, Typification of the genus *Sarcoptes*; D. Fairchild, Account of a trip through the Old World tropics; H. C. Oberholser, Curious behavior of an English sparrow.

Formal communication: B. W. Evermann, Seals and sea lions of California and Mexico.

November 6, 1926—696th Meeting.²

President Oberholser in the chair; 227 persons present.

New members elected: J. C. Bloeker, Jr., Mrs. E. S. Cobb, H. H. Knight, Mary E. McLellan, Harold St. John.

Formal communications: C. R. Aschemeier, A talk on gorillas; Ben Burbridge, The gorilla hunt (motion picture).

November 20, 1926—697th Meeting.³

President Oberholser in the chair; 84 persons present.

New member elected: H. S. Bernton.

Informal communications: T. S. Palmer, The "Parc Nacional Albert"; L. O. Howard, Control of the *Opuntia* pest in Australia by mealybugs.

Formal communications: B. W. Evermann, Conservation of the fisheries of the Pacific; G. F. Mitchell, The story of tea.

December 4, 1926—698th Meeting.⁴

Vice-President Chambliss in the chair; 109 persons present.

New member elected: D. D. Streeter.

Formal communications: H. D. Fish, A canoe trip through British Guiana; G. C. Leach, Trout propagation by the Bureau of Fisheries.

December 18, 1926—699th Meeting.⁵

President Oberholser in the chair; 67 persons present.

Informal communications: A. Wetmore, Two birds new to

¹Abstract to appear in Journ. Washington Acad. Sci.

²Abstract to appear in Journ. Washington Acad. Sci.

³Abstract to appear in Journ. Washington Acad. Sci.

⁴Abstract to appear in Journ. Washington Acad. Sci.

⁵Abstract to appear in Journ. Washington Acad. Sci.

Maryland; T. S. Palmer, Occurrence of the snowy owl near Washington, D. C.; E. A. Goldman, The snowy owl in the State of Washington.

Formal communications: D. S. Johnson, The Blue Mountains of Jamaica and their vegetation; F. C. Lincoln, The migration of young herring gulls.

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PROCEEDINGS
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RACES OR SUB-SPECIES IN RETICULITERMES.

BY THOS. E. SNYDER.

Races or sub-species of the termites *Reticulitermes lucifugus* Rossi and *flavipes* Kollar have recently been discovered in France by Dr. J. Feytaud (1924) and in the United States by N. Banks and T. E. Snyder; they are not merely variants but have composite characters. While these two termites occur in both Europe and the United States, *flavipes* has a wider distribution in North America than in Europe, whereas *lucifugus* has a broad dispersal throughout Mediterranean Europe and North Africa, but in the United States occurs only near Boston, Mass. It is quite probable that *lucifugus* is native to Mediterranean Europe, from where (Italy) it was described in 1792 and was introduced to the United States in the vicinity of the Arnold Arboretum. The original habitat of *flavipes*, however, is not definitely known; it was described at a later date than was *lucifugus*, namely, in 1837, from the Imperial hothouses at Schönbrunn near Vienna, Austria.

Dr. Feytaud kindly sent specimens of the variant occurring in France to Mr. Banks for comparison with *flavipes*; Feytaud notes in 1924 the differences between the typical *lucifugus* and this variant, presumably the termite, which under the name of *lucifugus*, caused great damage, between 1840 and 1850, in the villages of the Charente-Inférieure.

To further summarize briefly the morphological differences, the sub-species now occurring in the Département of Charente-Inférieure, France, has a lighter colored head than the typical *lucifugus* (as has *flavipes*). The wings are less smoky, with costal area lighter colored, the tibiae are lighter colored and the ocellus is separated from the eye by a distance equal to the long diameter of an ocellus (not quite as far as in *flavipes*),

whereas in *lucifugus* this distance is less than the diameter of an ocellus. In length this variant is shorter than is *lucifugus*, as is *flavipes*; the length of the forewing is greater than in either *flavipes* or in the variant in the United States from Arkansas; the forewing is not as broad as in *lucifugus*. In the typical *flavipes*, the forewing is shorter and narrower than in the typical *lucifugus*.

The sub-species, occurring in Arkansas, U. S. A., has the wings more cloudy than in *flavipes*, with costal area darker, the ocellus is separated from the eyes by a distance less than the diameter of an ocellus. The length of this variant is less than that of *lucifugus* but is slightly greater than that of *flavipes*; the width of the forewing is slightly greater than in *flavipes*.

Both *lucifugus* and *flavipes* are common and destructive termites; their ravages rank them insects of considerable economic importance. Unfortunately their life history or biology is but imperfectly known. Detailed, thorough investigations by many more students are needed. Fundamental principles of great importance and broad application are involved in the biology of these termites. Possibly evidence will be obtained as to the evolution of species.

The presence of races of these species of *Reticulitermes* renders it necessary to discover the original home of *flavipes*. As early as 1896 Dr. E. A. Schwarz of this Bureau stated that he believed that a study of the inquilines or guests of a termite occurring in both Europe and the United States might reveal to which country it was native. Introduced insects, as a rule, do not carry their normal parasites or inquilines with them into the country in which they become established. Such a cooperative study of inquilines between European and American entomologists should be made.

Certain fungus parasites attack both *lucifugus* and *flavipes*; these fungi—species of *Termitaria*—described in 1920 by Dr. Roland Thaxter of Harvard University, may aid in establishing native habitats.

Furthermore, parasitic intestinal protozoa occur in both termites. Dr. M. M. Metcalf of the Johns Hopkins University believes that a study of the protozoa from living termites might prove helpful in studies of geographical distribution, habitat and relationships. Already important investigations of these

living protozoa have been made by Dr. L. R. Cleveland of the Johns Hopkins University, Prof. S. F. Light of the University of California and Dr. Harold Kirby, Jr., of Yale University. Study of the protozoa of the races and experiments on the transfer of protozoa from one species to another should yield results.

More profound studies of the biology of *lucifugus* and *flavipes* may reveal that there is a crossbreeding between species—two in Europe and eight species of *Reticulitermes* in the United States—leading to the production of hybrids. Or interbreeding between the different types of reproductive forms *within the species* might produce variation in the progeny. Such interbreeding is not rare in nature.

A summary of our knowledge of the species of *Reticulitermes* now becomes necessary as a preliminary to further discussion.

Reticulitermes is considered by N. Holmgren to be a subgenus of the genus *Leucotermes*, which was established by Silvestri in 1901, with the species *tenuis* Hagen as genotype; this species was described in 1858, type locality Brazil. Fourteen species of *Leucotermes* Holmgren (sens. strict.) are included, the winged adults of which are light colored, with the wings only slightly reticulated but strongly hairy, ocelli not always present, pubescence dense, and are night flying. The soldiers have the mandibles more slender, elongate and straighter than in species of *Reticulitermes*. Species of *Leucotermes* have a more southern distribution — namely, 1 Nearctic, 6 Neotropical, 4 Oriental and 4 Australian species.

- 1858. *Leucotermes tenuis* Hagen. Antilles, Central and South America.
- 1896. *Leucotermes ferox* Froggatt. Australia.
- 1896? *Leucotermes platycephalus* Froggatt. Australia.
- 1898. *Leucotermes tenuior* Haviland. Borneo (Sarawak).
- 1900. *Leucotermes ceylonicus* Holmgren. Ceylon.
- 1902. *Leucotermes indicola* Wasmann. India (Bombay).
- 1902. *Leucotermes insularis* Wasmann. Cocos Island.
- 1915. *Leucotermes validus* Hill. Australia (Northern Territory).
- 1920. *Leucotermes aureus* Snyder. Arizona, U. S.
- 1921. *Leucotermes philippinensis* Light. Philippines.
- 1922. *Leucotermes clarki* Hill. W. Australia.
- 1924. *Leucotermes cardini* Snyder. Antilles.
- 1924. *Leucotermes convexinotatus* Snyder. Antilles and Central America.
- 1924. *Leucotermes longiceps* Snyder. Brazil.
- 1925. *Leucotermes crinitus* Emerson. British Guiana.

Species of *Leucotermes* occurring as fossils are *meadii* Scudder from Miocene shale, Florissant, Colorado, United States, and *hartungi* Heer from upper Miocene, Oeningen, Baden, Germany.

As a subgenus of *Leucotermes*, Holmgren in 1913 established *Reticulitermes*. "*Termes*" *flavipes*, described by Kollar in 1837, is the genotype;

type locality the Imperial greenhouses at Schönbrunn near Vienna, Austria. Fourteen species have been described; the winged adults are dark colored, with wings strongly reticulate but with few hairs, ocelli always present, pubescence not dense, and are day flying. The soldiers have the mandibles S-shaped and shorter than in species of *Leucotermes*. Species of *Reticulitermes* are of a relatively northern distribution; there are 2 Palearctic, 8-10 Nearctic (including 2 Palearctic species) and 4 Oriental (temperate) species, namely,

1792. *Reticulitermes lucifugus* Rossi. Mediterranean Europa, North Africa and United States.
 1837. *Reticulitermes flavipes* Kollar. Europe, Eastern United States and Mexico.
 1885. *Reticulitermes speratus* Kolbe. Japan.
 1907. *Reticulitermes virginicus* Banks. Southeastern United States.
 1912. *Reticulitermes flaviceps* Oshima. Japan (Formosa).
 1920. *Reticulitermes claripennis* Banks. Texas, Kansas, Arizona (U. S.) and Mexico.
 1920. *Reticulitermes hageni* Banks. Southeastern United States.
 1920. *Reticulitermes hesperus* Banks. Pacific Coast, United States.
 1920. *Reticulitermes hoferi* Banks. Arizona (U. S.).
 1920. *Reticulitermes humilis* Banks. Arizona (U. S.).
 1920. *Reticulitermes tibialis* Banks. Western United States.
 1920. *Reticulitermes tuniceps* Banks. Arizona and Utah (U. S.).
 1923. *Reticulitermes chinensis* Snyder. Suifu, Szechwan, China.
 1924. *Reticulitermes fukiensis* Light. Fuchow, Fukien, China.

In Baltic Sea amber occur *Reticulitermes antiquus* Germar, *borusicus* Von Rosen and *robustus* Von Rosen; this deposit being either upper Eocene or lower Oligocene in geological age.

To summarize, there are 29 living species of *Leucotermes* Silvestri (sens. lat.), 15 being in *Leucotermes* Holmgren (sens. strict.) and 14 in *Reticulitermes* Holmgren; in addition there are 2 fossil species of *Leucotermes* and 3 fossil *Reticulitermes*. These termites are distributed throughout the world as follows:

Leucotermes Holmgren (sens. strict.).

	Palearctic	Nearctic	Neotropical	Oriental	Australian	
Living.....	0	1	6	4	4	
Fossil.....	1	1	0	0	0	
Total.....	1	2	6	4	4	17

Reticulitermes Holmgren.

Living.....	2	8	0	4	0	
Fossil.....	3	0	0	0	0	
Total.....	5	8	0	4	0	17
Grand total	6	10	6	8	4	34

While these data indicate that the subgenus *Reticulitermes* is widely distributed and ancient, the largest number of living species occur in North America and hence North America is at present the center of distribution. However, in Europe 3 fossil species occur as early as the Oligocene, whereas no fossil species that can be placed in *Reticulitermes* have been found in the United States.

In this connection Feytaud's discovery that under the name *R. lucifugus* Rossi two distinct species or at least two distinct races exist in France is extremely interesting. One of these races is close to *flavipes* morphologically and the other the typical *lucifugus* of Italy.

Then later, an Italian entomologist, C. Jucci, in 1925 states that he believes that there are in addition marked differences in the biology of these two races. The *flavipes* type is able to attack living trees and new colonies being formed by winged swarming adults; the other, the true *lucifugus*, lives only in dead wood and forming new colonies by non-winged reproductive adults, as in Italy. In the United States two morphologically distinct races of *flavipes* occur, one occurring in Illinois and Arkansas being morphologically similar to the European *lucifugus* and the other the typical *flavipes*. However, as yet, no biological differences have been discovered between these two races of *flavipes* in the United States; the typical *flavipes* infests both living and dead trees. This apparent lack of biological difference may merely be due to incomplete knowledge.

Again in Texas, there has been found, outside of the normal range of *R. hageni* Banks, a morphological variety of *hageni* that may prove to be a sub-species. At present there are insufficient specimens to enable definite conclusions to be drawn.

CONCLUSIONS.

It may eventually be proven that new species of *Reticulitermes* are being evolved, i. e., there are now nascent species. Certain species are very close morphologically and races or sub-species exist with composite characters; close species may be merely variations! Or termites being plastic, there is a tendency toward a mean, and in reality there are no sub-species. Here is an excellent opportunity for cooperation between entomologists of Europe and America to establish (1) the original habitat of *flavipes*, whether from Mexico, the United States or Europe; (2) whether there is cross-breeding between species and the consequent production of hybrids; (3) whether interbreeding between the different reproductive types within the species—which occurs in nature, but which we (Snyder, 1920, 1925) have not been able to promote artificially in glass breeding cages—may result in progeny differing from the normal. Dr. L. R. Cleveland in 1924 succeeded in obtaining eggs from the crossing of macropterous female and brachypterous male adults but was not able to rear these, due, it is believed, only to unfavorable conditions in the cages. Methods of collecting, rearing and breeding termites are discussed in another paper. It is hoped that others will become interested in this important problem in the genetics of termites and the biology and evolution of the termite castes.

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PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW SPECIES OF CHELOGYNUS (HYMENOPTERA: DRYINIDAE) FROM NEW YORK STATE.

BY J. CHESTER BRADLEY.

In order that these two apparently undescribed species of *Chelogynus* may be included in the forthcoming New York State List of Insects, I here describe them.

Chelogynus vivariensis, n. sp.

Female.—Black and shining except the antennae, mouthparts, mandibles and legs. Mandibles, except brown teeth, mouthparts, legs including coxae but excluding the smoky brown apical two-thirds of the hind tibiae, and the basal two and a half antennal segments, pale translucent testaceous, the basal internal segments however a little more yellowish and opaque. Remainder of the antennae yellowish brown shading apically into dark brown.

Head from a lateral view more porrect and elongate than in *C. xanthothorax*, its dorsal surface more continuous in plane with that of the thorax, terminating behind in a strong, somewhat reflexed carina; head dull and densely chagreened, a fine groove extending from between antennae to the front ocellus. Antennae entirely filliform, the segments more slender than in *C. xanthothorax*, the second segment about two-thirds as long as the third, which in turn is about equal to the fourth.

Pronotum as long as the mesonotum, transversely finely aciculate, and with some rather large, shallow punctures. Mesonotum, and also the scutellum, smooth, shining and impunctate; parapsidal grooves weakly impressed, terminating before reaching the scutellum. Mesosternum and sternal aspect of mesopleura closely punctate, the postero-lateral aspect of the latter with an impunctate area. Dorsal surface of propodeum coarsely rugose, not areolate, its posterior face more finely, transversely rugulose, with a distinct elongate central areola, set off by fine carinae.

Wings uniformly and entirely hyaline. The first segment of the anterior tarsi but little shorter than the fourth; process of the second with a few long bristles; the middle chela arm (5th segment) is armed with a row of lamina, as is also its apical process.

Abdomen polished and shining; last sternite compressed.

Length, 3 mm.

Described from one female from McLean Bogs Biological Reservation, 26 July, 1925, collected by Mr. S. Robinson. Holotype—Cornell University, No. 732.1.

This species seems to be most closely allied to *C. melanacrias* Perkins, as far as the description of the latter indicates. *Melanacrias* is however an Arizona species, and has the second segment of the antenna about equal in length to the third or fourth, whereas in *vivariensis* it is much shorter.

***Chelogynus xanthothorax*, n. sp.**

Black, the mandibles except teeth, palpi, first two and third (except apex) segments of the antennae, legs entirely and abdomen, yellowish testaceous; the abdomen becoming gradually infuscated toward the apex. Covered with a short and sparse pale pubescence.

Head from a lateral view rounded and not porrect, its dorsal surface less in a continuous plane with the dorsum than in the case of *C. vivariensis*, the eyes prominent. Head polished and shining with very few punctures above, but rather closely punctate near the antennae. Antennae thickened toward the apex, the apical segments, therefore stout, the second segment but little shorter than the fourth, which is about two thirds as long as the third. Vertex separated from the occiput by a strong carina.

Pronotum rather longer than the mesonotum, smooth and polished but with a few scattered punctures. Mesonotum and scutellum impunctate (except for a few inconspicuous punctures around the edges) polished and shining; parapsidal furrows weakly impressed, but only anteriorly. Mesopleura somewhat rugose on their lateral prominences but with a smooth area behind, and anteriorly shallowly punctate, as is the sternum. Propodeum rugose, more weakly so on the posterior face, which as in *C. vivariensis* has an elongate medial transversely rugulose area, set off by fine carinae.

Wings hyaline except for a pale brownish area in the region of the stigma. Chela as described for *C. vivariensis*. Abdomen polished and shining, impunctate, the last ventral segment strongly compressed and prominent.

Length, about 3 mm., but slightly smaller than the preceding. Described from a female (holotype) taken by H. E. Guerlac and the author while sweeping vegetation near Taughannock Falls, N. Y., during the past summer and a female paratype taken by Dr. P. P. Babiý along the shore of Keuka Lake at Penn Yann, 12 July, 1925. Dr. Babiý found his specimen in a beetle collecting apparatus which he had stocked with wrack from along the shore of the lake.

Types.—Holotype, Cornell Univ. No. 731.1; paratype, female Cornell Univ. No. 731.2.

PROCEEDINGS
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TWO NEW AMERICAN CHILOPODS.

BY RALPH V. CHAMBERLIN.

In the course of the routine identification of two lots of myriopods, one received from the Federal Horticultural Board and one from Mr. James Zetek, two interesting new genera of chilo-pods were noted. These are described below.

FAMILY LITHOBIIDAE.

Enarthrobium, gen. nov.

Antennae long, the articles not fixed in number, above twenty-five. Ocelli present, seriate.

Presternal teeth 2+2, the special spine hair-like, ectal in position.

Posterior angles of the ninth, eleventh and thirteenth dorsal plates produced.

Coxal pores circular, uniseriate.

Tarsi of anterior legs divided.

Ventral spines of anal legs 0, 1, 3, 2, 0; dorsal spines, 1, 0, 3, 1, 0; the claw single.

Claw of female gonopods tripartite; the basal spines 2+2.

Fourth joint of anal legs of male with a lobe above at the distal end.

Genotype.—*E. bullifer*, sp. nov.

This genus differs from *Sonibius* in not having the articles of the antennae fixed in number at twenty, in having the fourth joint of the anal legs of male provided with a special lobe, and in other minor features.

Enarthrobium bullifer, sp. nov.

Dorsum brown or light chestnut. Legs and antennae brown, lighter distally.

Antennae moderately long, consisting in the type of twenty-six (right) and twenty-seven (left) articles.

Presternal teeth 2+2, the mesal one on each side larger than the ectal one.

Posterior dorsal plates roughened, becoming smoother anteriorly. Caudal corners of the ninth, eleventh and thirteenth dorsal plates strongly produced caudad.

Ventral spines of first legs 0, 0, 1, 3, 1. Ventral spines of penult legs

0, 1, 3, 3, 1; dorsal 1, 0, 3, 1, 1; claws 2. Ventral spines of anal legs 0, 1, 3, 2, 0; dorsal, 1, 0, 3, 1, 0; claw single. None of the coxae laterally armed.

Coxal pores small; in number, 4, 5, 5, 3.

The lobe on the fourth joint of the anal legs of male is at extreme caudal end above; it is small, leans caudad of dorsad and is distally truncate.

A partly grown female accompanying the male type has the three lobes of the genital forceps acute and the basal spines 2+2, slender and acuminate.

Length, 18 mm.

Locality.—South Carolina: Charleston. One male (holotype, M. C. Z. 2233) and a young female taken in a heap of rubbish in a garage by J. T. Rogers.

FAMILY SCHENDYLIDAE.

Schendylurus Silvestri.

Schendylotyn, subgen. nov.

Differing from *Schendylurus* sens. str. (African) and *Ploutoschendylurus* (American) in having the dental plate of the mandibles entire, not divided into blocks or segments.

Type.—*Schendylurus* (*Schendylotyn*) *integer*, sp. nov.

Schendylurus (*Schendylotyn*) *integer*, sp. nov.

General color, pale yellow.

Head widest behind middle, narrowed and rounded forward, frontal suture not evident.

Antennae short, cylindrical, the first joint thicker; subcontiguous at base.

Basal plate wide. Prehensors failing much of attaining anterior margin of head; claws slender and weak; all joints unarmed; prosternum without chitinous lines.

Arc of labrum wide, bearing about twelve true teeth in addition to a few serrations on each lateral portion.

Dental plate of mandible undivided, bearing typically six teeth.

Ventral pores present in a subcircular or elliptical area in front of caudal margin of plates; a few present on first plate and on others to the penult inclusive.

Last dorsal plate broad.

Last ventral plate wide, sides converging caudad. Glands of last coxae two on each side; homogeneous, opening under edge of ventral plate.

Pairs of legs, forty-nine.

Length, 12 mm.

Locality.—Canal Zone: Barro Colorado Id. One male (M. C. Z. 2253) taken in nest of termite *Anoplotermes gracilis* Snyder by J. Zetek, 30 Oct., 1924.

PROCEEDINGS
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NOTES ON THE TYPE LOCALITY OF *PENTSTEMON*
MICRANTHUS NUTTALL.

BY WILLIAM A. DAYTON.

There has been some disagreement among botanists as to the specific status of *Pentstemon micranthus* Nutt., many holding it to be a synonym of *P. procerus* Douglas. Mr. Ivar Tidestrom of the Bureau of Plant Industry, who is consulting expert of the Forest Service in matters of plant identification, is rather inclined to the opinion that *Pentstemon micranthus* is a valid species. Certainly, at least, the sheets in the Washington office herbarium of National Forest range plant specimens which Mr. Tidestrom has referred to *Pentstemon micranthus* show the smallest flowers of all the material there of this large genus; the name *micranthus* is, at least, well chosen.

In his "Scrophulariaceae of the Central Rocky Mountain States"¹ Dr. Pennell has the following note (p. 365) on *Pentstemon micranthus*:²

"*Pentstemon micranthus* Nutt. Journ. Acad. Phila. 7:45. 1834. 'Hab. In the valleys of the Rocky Mountains, near the sources of the Columbia (*N. B. Wyeth*).' Type, collected by Wyeth, July 11, in Fremont County, Idaho, or in Lincoln County, Wyoming, seen in herbarium of Academy of Natural Sciences of Philadelphia."

Recently Dr. Pennell very kindly presented the writer with a photograph of the type specimen of *Pentstemon micranthus* and this, at the suggestion of Mr. Tidestrom, has been mounted on a U. S. Museum sheet and deposited in the U. S. National Herbarium. I have had a "Plants of Wyoming" label prepared for this mount and this appears to call for some explanation.

¹Pennell, Francis W., Vol. 20, Part 9, Contributions from the U. S. National Herbarium, 1920.

²Remanded to synonymy under *p. procerus*, *op. cit. supra*.

*Pentstemon micranthus*¹ was described by Nuttall in a paper² "read February 18, 1834,"³ before the Philadelphia Academy of Natural Sciences and, in his prefatory paragraph, the author pays tribute to the collector's assiduity and skill, although "this was the first essay of the kind ever made by Mr. W(yeth)," and adds that all the plants referred to in the paper were gathered "on the returning route of Mr. W. from the Falls of the Columbia to * * * the Missouri."

The type specimen of *Pentstemon micranthus*, as Dr. Pennell (*loc. cit.*) indicates, was collected by Wyeth "July 11," the year not stated. But, from Nuttall's comments in his paper (*loc. cit.*), the year of collection was obviously 1833.

On his return (eastbound) trip in 1833 Wyeth records in his Journal⁴ that, on July 9th, "We entered Pierre's Hole⁵ and camped on the N. W. side of it." The following day, July 10th, he "moved 12 miles S. E., crossing a difficult swamp and camped about 2 miles from the battle ground of last year with the Gros Ventres."⁶ On July 11th he records that he "Started early and made 3 miles E. S. E. to the foot of the mountains, then 8 miles E. S. E. to the summit, then 6 miles E. to Lewis Fork and 1 mile E. across it at the same place we crossed last year. * * * The river is here much choked up with islands and heaps of drift wood and a

¹Originally published (p. 45, *op. cit. infra*) as *Pentstemon micranthum*.

²Nuttall, T., "A Catalogue of a Collection of Plants made chiefly in the Valleys of the Rocky Mountains or Northern Andes, towards the sources of the Columbia River, by Mr. Nathaniel B. Wyeth." Journ. Phila. Acad. Nat. Sci. VII, pt. 1, 1834. N. B.—The "B." in Wyeth's name is obviously a typographical error.

³Incidentally it is highly probable that the man "who," as Bancroft says, "more directly than any other man marked the way for the ox-teams which were * * * to bring * * * Americanized civilization * * * across the roadless continent," Wyeth himself, was in the audience. Nuttall was his personal friend and we know, from his correspondence, that Wyeth was in Philadelphia on this date.

⁴"The Correspondence and Journals of Captain Nathaniel J. Wyeth, 1831-6." Oreg. Univ. Dept. Econ. and Hist., Oreg. Hist. Soc. Contr., "Sources of the History of Oregon," Vol. 1, Pts. 3-6, 1899. Edited by F. G. Young, Sec. Oreg. Hist. Soc.

⁵The U. S. Geological Survey reports that "Pierre's Hole" is what is now called the Teton Basin, Teton County, eastern Idaho, contiguous to the western Wyoming boundary.

⁶Captain Wyeth indicates this in his map of his "First Expedition" as taking place south of the "Trois Tetons." In his Journal, the entry for July 4, 1832, he somewhat cryptically describes his celebration as follows: "Decamped and at noon crossed the divide and drank to my friends with mingled feelings from the waters of the Columbia mixed with alcohol and eat of a Buffaloe cow. * * * Three of my men are sick." On July 5th they go 20 miles along a wooded river. At 2 o'clock, July 6th, they stop on Lewis River (Snake River), "within 20 miles of the Trois Tetons," the river here running "nearly S. and * * * divided over a bottom about 2 miles and into 8 streams very rapid and difficult." This very well describes the course and condition of the Snake River as it skirts "Jackson Hole" to the west, in the elk country, near the present borders of the Teton National Forest. On July 7th they apparently go through Teton Pass, on the 8th they reach "the plain" and, after a 10-mile march, "the rendezvous" (shown on Wyeth's map) of trappers and Indians, a very considerable encampment. Wyeth stayed here nine days, when all but eleven of his men deserted him. On July 17th the Captain and his men go southeast towards a pass through the mountains and the next day occurred the battle with the Indians. The fighting evidently took place near and along the present Idaho-Wyoming border.

great quantity of mud * * * Lewis Fork here runs S. E. about 9 miles then turns S."

It is patent that, on July 9, 1833, Wyeth was eastward bound, and entered the Teton Basin practically at the present Idaho-Wyoming boundary, and that on July 11th, the day he collected the type of *Pentstemon micranthus*, he started practically from the western foot of the Teton Range, which is well within the Wyoming line, and went up the broad, polynesian stretches of the South Fork of the Snake River as it traverses Jackson Hole. A close study of the accompanying map, with Wyeth's diary statements and the rough map he made of his expedition, makes it a virtual certainty that *Pentstemon micranthus*, a distinctly high-montane species, is typically a Wyoming plant.



PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NOTES ON THE BEHAVIOR OF *COTINIS NITIDA* L.
AND ITS BIRD ENEMIES.

By F. H. CHITTENDEN.

Some studies of the behavior of *Cotinis nitida* L., known in economic literature as the green June beetle, and two of its bird enemies were conducted during the summer and fall of 1922 and later at Washington, D. C. Beetles deposited their eggs where they were attracted by loose, heavily manured soil. The larvae grew apace and toward the middle of August were from about two-thirds to three-fourths grown. After a heavy rainfall on September 2, large numbers of them crawled to the surface and became distributed to other portions of the yard in which they were breeding, not only in that which had been manured but in hard, compact soil as well. A similar occurrence was observed in later years. In the compact soil it was noticed that the larvae frequently came to the surface to extrude excrementitious matter and earth, and by September 13 larvae not only came up from this hard earth but left tracks on it, showing that they had taken short trips of 2 or 3 inches in length overnight and apparently returned into the same holes, a habit which seems unusual for a larva. It was noticeable that the grubs more frequently came out from the soil where there were small tufts of grass, as in these locations the earth is comparatively soft.

During October, 1922, there were several cool spells and some warm days, when a few larvae were captured by means of a small tin can, like the "cup" used by golfers, inserted into and level with the ground. These captures showed that the larvae were rapidly attaining full growth after the first days of October in spite of sudden atmospheric changes. The larvae at this time always opened the orifices to their tunnels at night, and

only on two occasions were they observed to crawl about on the surface, the evidence consisting of the short trails which they left in so doing.

During the last week of April, 1923, on two occasions after storms, a pair of starlings was observed devouring *Cotinis* larvae from the openings of their burrows. The starlings, which previously had been quite shy, were apparently gorged with the feast and could be approached closely. It appears quite possible that starlings might learn to follow the plow for white grubs in the same manner as do blackbirds.

On February 24, 1925, a starling was heard at work about daybreak where *Cotinis* larvae had hibernated. The ground had been damp for several days and the temperature was about 56° F. at the time of the first observation. A little later this starling was joined by a second and together they thrust their beaks into the larval exit holes and destroyed many specimens. There were large areas where a dozen holes to the foot could be counted. While feeding on these large larvae the starlings make a peculiar sound somewhat similar to the grunting of a pig or some other mammal, combined with a choking squeak. A little later on the following morning, with a temperature of 45° F., a pair was observed searching for larvae but unsuccessfully, since an examination of the earth showed that what larvae remained alive had evidently gone deeply into their burrows. Following this, the temperature sank to a point where the larvae were no longer active and as a result the starlings were not observed again attacking them until a warm spell, beginning March 8.

There is evidence of an unusual attraction of the green June beetle to the cardinal and *vice versa*. When a bird alights among a lot of them where they congregate in bright sunlight and begins pecking at them, some fly directly at the bird as though in actual combat, giving the impression that the bird, because of its bright color, attracts the beetle. It was surmised at the time that the insect might mistake the bird for a flower. That this surmise may be correct is borne out by the observation of Dr. T. E. Snyder at Norfolk, Va., in July, 1925, that the beetles are strongly attracted to red varieties of *Canna*. The bird dodges the beetles without apparent effort and without leaving the ground, but pecks those that approach closely.

One beetle which had been freshly killed was placed where a cardinal would have access to it, and after the bird's departure, it was found that practically the entire body had been consumed, a mere trace of some of the hard parts remaining.

When the beetles issued the second week in July in 1925, the starlings were not in evidence, but the cardinals appeared a few days later, evidently searching for the beetles, which were extremely rare.

Although the notes which are here presented are fragmentary, owing chiefly to the activities of the starlings in destroying the larvae, nevertheless the observations made are suggestive of interesting behavior, and the object in presenting them now is to call attention to the possibilities of verifying just such traits for permanent records.

PROCEEDINGS
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THE COMMON BOX-TURTLE, A NATURAL HOST FOR
CHIGGERS.

BY H. E. EWING.

On July 10 of the present summer (1925) the writer picked up a mature specimen of the common box-turtle, *Terrapene carolina carolina* (Linné), in a swampy woods near North Beach, Maryland. An examination of the specimen with a hand lens revealed that it was infested with a reddish orange mite, the mites being concentrated in the fossae of the posterior legs and about the base of the tail.

The turtle was brought to the United States National Museum and placed in a breeding jar suitable for rearing chiggers. Some of the mites were removed and examined with the microscope. They were found to be the larvae of *Trombicula irritans* (Riley), the common North American chigger.

On July 16 one engorged larva was observed detached, crawling about in the soil contained in the breeding jar.

On the 18th most of the chiggers were observed to have detached themselves, and the host was removed from the breeding jar. By the 22d, only twelve days after the turtle was captured, not a single chigger remained attached.

By July 24 a nymph had emerged from one of the engorged, quiescent, soil-inhabiting larvae, and the next day another nymph was detected. The nymphs were removed on the 25th and killed for study.

On August 4 all the soil in the breeding jar was thoroughly examined and removed. Two additional nymphs were obtained, one being killed and one being placed in a small breeding cell with cockroach feces for food. This second nymph lived for many days, dying on September 4 without any further transformation.

On July 23 two infested box-turtles were found in the same woods where the first one was obtained. These two were placed together in a small breeding box provided with sand at the bottom. On July 25 a third infested turtle, found the day before in the same woods as the others, was placed in the breeding box.

From these three infested turtles there were eventually obtained 24 nymphs and 2 adults of *Trombicula irritans* (Riley).

The finding of chiggers upon the common box-turtle may help explain the great abundance of chiggers in the swampy woods of the Atlantic Coast Region, but as yet insufficient data are available for the proper estimation of its relative importance as a host. It should be noted, however, that the chiggers engorge rapidly on the box-turtle and drop off without difficulty. Also, it should be remembered that the turtle host molts but once in a season, and that this molt normally takes place in the fall of the year, usually after the chigger season is over.

The conditions of parasitism on the box-turtle are vastly different from those obtaining in the case of certain snakes known to be attacked by chiggers. On the snake hosts the chiggers engorge very slowly and detach with difficulty. Further, the snakes molt several times during the season, and at each molt destroy the partly engorged chiggers that are attached to their skin.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A LIST OF THE PUBLICATIONS OF
ALBERT KENRICK FISHER.

BY T. S. PALMER AND W. L. McATEE.

The published papers of Dr. Albert Kenrick Fisher cover a period of half a century from October, 1875, to January, 1925. A fitting opportunity for the issue of a list of his publications, as a contribution to American ornithology, is afforded on the occasion of his 70th birthday, March 21, 1926. While these papers are concerned chiefly with birds and mammals they extend also to other subjects.

Dr. Fisher's principal works comprise a comprehensive treatise on Hawks and Owls, a report on the Birds of the Death Valley Expedition, both published in 1893, several important papers on economic ornithology, and three memorial addresses: on Thomas McIlwraith, Lyman Belding, and Walter Bradford Barrows, presented before the American Ornithologists' Union. His minor contributions fall naturally into four groups: Geographic distribution of species, economic zoology, biographical notes, and reviews. The following list comprises 150 titles.

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- 1876 Small Birds [*Chrysomitris tristis* and *Dendroeca coronata*] caught by the Burdock. <Am. Nat., X, No. 4, pp. 239-240, Apr., 1876.
Notes from our Correspondents [A. K. F. on scarlet tanagers, olive-backed thrushes, yellow-breasted chats and other birds feeding on maggots in the body of a dead horse]. <Forest & Stream, VI, p. 355, July 6, 1876.
- 1878 Robins' Eggs, Spotted. <Bull. Nuttall Ornith. Club, III, p. 97, Apr., 1878.
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<Bull. Nuttall Ornith. Club, III, pp. 191-192, Oct., 1878.

- 1879 Linnean Society [Occurrence of several accidental Visitors at Sing Sing, N. Y.]. <Forest & Stream, XI, p. 482, Jan. 16, 1879.
Occurrence of several rare Birds near Sing Sing, N. Y. <Bull. Nuttall Ornith. Club, IV, pp. 61-62, Jan., 1879.
Helminthophaga leucobronchialis in New York. <Bull. Nuttall Ornith. Club, IV, No. 4, p. 234, Oct., 1879.
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Depredations of the European Sparrow. [Quotation from A. K. F. by Elliott Coues.] <Am. Nat., XIV, No. 2, p. 130, Feb., 1880.
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Dendroeca palmarum at Sing Sing, N. Y. <Bull. Nuttall Ornith. Club, VII, p. 249, Oct., 1882.
The Snow Goose (*Chen hyperboreus*) at Sing Sing, N. Y. <Bull. Nuttall Ornith. Club, VII, p. 251, Oct., 1882.
Habits of the English Sparrow. <Am. Nat., XVI, No. 12, p. 1009, Dec., 1882. (Note from A. K. F. published by Elliott Coues); see also English Sparrow Bull., p. 305, 1889.
- 1883 Capture of *Aegiothus linaria holboellii* in the Lower Hudson Valley. Bull. Nuttall Ornith. Club, VIII, p. 121, Apr., 1883.
Nesting of *Chrysomitris pinus* at Sing Sing, N. Y. <Bull. Nuttall Ornith. Club, VIII, pp. 180-181, July, 1883.
Heterodon platyrhinus niger in southern New York. <Forest & Stream, XXI, No. 21, p. 408, Dec. 20, 1883.
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PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW RACE OF *CITELLUS TERETICAUDUS* FROM
LOWER CALIFORNIA.

BY LAURENCE M. HUEY.

Specimens of *Citellus tereticaudus* recently secured in the desert region bordering San Felipe Bay, Lower California, Mexico, have been found to vary so markedly from the forms hitherto known as to warrant the description of a new subspecies, as follows:

Citellus tereticaudus vociferans,¹ subsp. nov.

SAN FELIPE ROUND-TAILED GROUND SQUIRREL.

Type.—From San Felipe, Lower California, Mexico; No. 5127, Collection of the San Diego Society of Natural History; adult ♀; collected in the *Lycium* association just back of the sea beach by Laurence M. Huey, March 25, 1926.

Color.—As compared with *Citellus tereticaudus tereticaudus*, dorsal coloration much grayer and more grizzled, the hairs having heavy whitish tips; underparts more grayish-white, including cheeks and parts of face about ears.

Cranial Characters.—Zygomatic arch is less angular than that of *C. t. tereticaudus*, when viewed from side, and of lighter construction, and tooth row averages shorter.

Measurements.—*Type*: Total length, 265; tail vertebrae, 97; hind foot, 37; weight 142.3 grams. Ten adults average: Length 252.4 (240-265); tail 90.9 (81-97); hind foot, 36.0 (33-38); weight, 138.77 grams (115.0-145.5). *Skull (type)*: Condyllo-basal length, 36.7; zygomatic breadth, 22.9; length of tooth row, 7.0; depth of interpterygoid notch, 7.2.

Remarks.—The new form is clearly definable by color and is instantly recognizable from either of the two forms which occur to the northward, namely *C. t. tereticaudus* and *C. t. chlorus*. The range of the latter is checked by that of *C. t. tereticaudus*, which reaches westward from the Colorado River well into the foothills of the coast range mountains.

Specimens examined.—*Citellus tereticaudus tereticaudus*: 10 from Bard, Imperial County, California, 7 miles north of Old Fort Yuma, California

¹So named on account of the animal's unusual vocal ability.

(type locality), and about as near the type-locality as specimens can be obtained nowadays; 1 from La Puerta Valley, San Diego County, California; 2 from Harper's Well, Imperial County, California, west side of the Colorado Desert; 1 from Fish Springs, Imperial County, California. *Citellus tereticaudus chlorus*: 3 from Whitewater Ranch, Riverside County, California; 2 from Palm Springs, Riverside County, California (type-locality). *Citellus tereticaudus vociferans*: 27 from San Felipe, Lower California, Mexico (type-locality); 1 from 20 miles north of San Felipe, Lower California, Mexico.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTION OF A NEW *ORIOLOUS* FROM THE
NICOBAR ISLANDS.

BY HARRY C. OBERHOLSER.

Examination of a series of *Oriolus maculatus* from the various islands of the Nicobar group indicates that there are two geographic races represented in these islands. The *Oriolus macrourus* of Blyth¹ is from the central islands of the group. Therefore the bird from Car Nicobar, which differs from that of the remaining islands, is without a name. It may be called

Oriolus maculatus eustictus, subsp. nov.

Chars. subsp.—Similar to *Oriolus maculatus macrourus*, but, in the male, with the yellow tips of the secondaries and tertials usually much larger and always present; yellow tips of the middle rectrices broader, those of the next pair also broader on both webs, on the outer web usually diagonal (instead of truncate as in *Oriolus maculatus macrourus*); in the female, with the back somewhat more golden.

Description.—Type, adult male, No. 178642, U. S. Nat. Mus.; Car Nicobar Island, Nicobar Islands, January 24, 1901; Dr. W. L. Abbott. A broad stripe from the bill on each side covering the lores and the orbital region, and meeting its fellow across the occiput, black; forehead and middle part of crown, bright gamboge yellow; remaining upper parts and sides of neck, between bright gamboge yellow and light cadmium, but the rump and upper tail-coverts less golden; most of tail slightly golden lemon chrome, but the two middle rectrices (excepting narrow tips), and the succeeding pair (excepting broad tips), together with the bases of the remaining pairs, black; most of the wings black, the inner edges of the quills somewhat brownish, but the middle part of the outer webs of some of the primaries narrowly margined with white, the inner primaries slightly tipped with dull white; narrow tips of secondaries, shaft stripes (broader basally) on two inner tertials, and a small speculum formed by tips of the primary wing-coverts, pinard yellow; greater wing-coverts lemon chrome; middle and lesser wing-coverts like the back; chin and median portion of throat, of the

¹*O[riolus]. macrourus* Blyth, Journ. Asiat. Soc. Bengal, XV, No. 169, 1846, p. 46 (central islands of the Nicobars).

same shade of yellow as the crown; remainder of lower surface, lining and edge of wing, like the rump; "iris red; bill dark purple at base, becoming pale at tip; feet dark leaden."

Measurements.—Male:¹ wing, 151–160.5 (average, 154.4) mm.; tail, 115–118.5 (116); exposed culmen, 30–32 (31.2); height of bill at base, 11–12.5 (11.7); tarsus, 24.5–26 (25.3); middle toe without claw, 19–21 (20).

*Female.*² wing, 146–152.5 (average, 149.6) mm.; tail, 114–117.5 (115.6); exposed culmen, 30–32 (31); height of bill at base, 10–11 (10.6); tarsus, 26; middle toe without claw, 19–21 (20).

Remarks.—This new race is less like *Oriolus maculatus andamanensis* than is *Oriolus maculatus macrourus* from the other Nicobar Islands, although it is intermediate in distribution. The specimens examined show very little individual variation. This race is apparently confined to the island of Car Nicobar.

There is apparently very little or no difference in size between *Oriolus maculatus macrourus* and *Oriolus maculatus eustictus*, as the following average measurements of four males of the former compared with the measurements of the latter given above will show: wing, 153.8 mm.; tail, 116.5; exposed culmen, 32.3; height of bill at base, 12; tarsus, 26.1; middle toe without claw, 20.

The original description of *Oriolus macrourus* Blyth³ indicates that the type locality of this form is the central islands of the Nicobar group, leaving thus the birds from Car Nicobar as the race requiring a name. Both of these forms are without much doubt subspecies of *Oriolus maculatus* Vieillot from Java, since individual variation in characters bridges over the difference between them and the birds commonly considered as forms of *Oriolus maculatus*. In *Oriolus maculatus maculatus* the outer tail-feather usually is not wholly yellow, but has some black at its base.

¹Five specimens.

²Three specimens.

³Loc. cit.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NOTES ON AMERICAN ANTHOCORIDAE WITH
DESCRIPTIONS OF NEW FORMS.¹

BY CARL J. DRAKE AND HALBERT M. HARRIS.

During the past few months the writers have been studying the hemipterous family Anthocoridae with the object of monographing the group for North America. Due to the fact, however, that so little has been done with the family and that keys constructed now would soon be valueless it is thought best to publish here a few general notes with descriptions of new forms with the hope that this paper will lead to the acquisition of more material and thus the planned monograph in the end be more complete and valuable. Other than their own collection the authors have been permitted to study the undetermined material belonging to the U. S. National Museum, the collection of the Illinois State Natural History Survey and the collection of Dr. H. H. Knight. Thanks are due Mr. W. L. McAtee, Dr. T. H. Frison, and Dr. Knight, respectively, for their kindness in allowing the use of the above mentioned collections in this study.

Lasiochilus hirtellus, n. sp.

Oblong-ovate, broadest beyond the middle, clothed with numerous long scattered hairs, brownish testaceous, the head and pronotum shiny, the elytra duller. Head distinctly longer than broad, smooth, clothed with a few long erect hairs. Eyes reddish to blackish, coarsely granulated. Ocelli reddish. Antennae long, testaceous to rufotestaceous, clothed with numerous long hairs, segment I stout, reaching slightly beyond apex of head; II longest, considerably stouter than III or IV, gradually swollen towards apex; III and IV very slender, the hairs varying in length; pro-

¹ Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

portion I: II: III: IV:: 11: 25: 21: 18. Rostrum reaching to intermediate coxae.

Pronotum smooth, strongly narrowed anteriorly, slightly more than twice as wide at base as at apex, length thru median line sub-equal to width at apex, broadly emarginate behind, with a transverse depression in front of posterior lobe; the anterior lobe with a distinct median, longitudinal fovea behind. Scutellum depressed and indistinctly rugulose before the apex. Hemelytra distinctly punctured, more closely and coarsely so on clavi, clothed with long hairs; embolium with numerous long hairs along outer margin, at apex hardly as wide as corium; membrane somewhat brownish. Wings reaching slightly beyond apex of abdomen, the cell without a hamus. Legs yellowish brown, clothed with a few hairs. Ostiolar canal curved posteriorly. Abdomen beneath clothed with a few long hairs which are longer and most numerous at apex. Length 3.2 mm., width 1.19 mm.

Holotype: male, Thomasville, Alabama, June 11, 1918, H. H. Knight, collector. *Allotype*: Columbus, Texas, May 23. *Paratypes*: 27 specimens, Brownsville, Texas, May 4, 1904, and June 5, 1904, H. S. Barber, collector and Feb. 4, Geo. Garner, collector; Devers, Texas, June 23, 1917, H. H. Knight, collector; Anahuac, Texas, Oct. 8, 1918, H. S. Barber; Presidio Riv., Sinaloa, Mexico, Sept. 20, 1918, J. Aug. Kusche, collector; Opelousas, Louisiana, Pilate; Bayo Sara, La., Jan. 16, 1919, E. A. Schwarz; Crowley, La., at light, E. S. Tucker; Alexandria, La., Feb. 26, 1909, on cornstalk, E. S. Tucker; Gainesville, Florida, July 11, 1918, on velvet beans, J. R. Watson, collector.

Holotype and *allotype* in authors' collection. *Paratypes* in collection of U. S. Nat. Museum, Illinois State Natural History Survey, Iowa State College, H. H. Knight and the authors.

***Lasiophilus comitalis*, n. sp.**

Elongate-ovate, rather sparsely clothed with moderately long sub-erect hairs; head, pronotum, and base of scutellum shiny, rufo-piceous; the hemelytra and apex of scutellum dull, dark brownish testaceous to fuscous. Head short, its length subequal to width through the eyes. Eyes moderately large, reddish. Ocelli prominent, rather distant from eyes. Antennae testaceous, moderately clothed with long stiff hairs of variable lengths; segment I scarcely reaching apex of head; II moderately stout, considerably thickened towards the apex; III and IV very slender; the proportional length of the segments—I: II: III: IV:: 7: 18: 16: 18. Rostrum pale testaceous, moderately stout, extending to middle of mesosternum, segment I reaching to anterior margin of eyes, II to the apex of the anterior coxae.

Pronotum moderately narrowed anteriorly, the lateral margins ciliate and slightly sinuate, the apex broader than head through eyes, the disc smooth with posterior lobe finely rugulose, the base sub-angularly and deeply emarginate. Scutellum depressed apically, the depressed portion dull and rugulose. Hemelytra dull, clothed with moderately long, semi-erect hairs which are arranged in rows, indistinctly punctate; the embolium long,

its outer margin ciliate, its apex not quite one-half as wide as corium. Membrane slightly smoky, subhyaline. Legs brownish, the femora thickened and mostly fuscous. Ostiolar canal short, strongly curved posteriorly. Body beneath reddish brown to fuscous, the apex of the venter beset with numerous very long slender hairs. Length 2.77 mm., width .90 mm.

Holotype: male, Hendersonville, North Carolina, on *Hicoria*, W. F. Fiske, collector (Hopkins, U. S. 1781 d), type #29146, U. S. Nat. Museum. *Allotype*: female, taken with type. *Paratypes*: one male and one female, Tryon, N. C., on *Hicoria*, W. F. Fiske, collector (Hopkins, U. S. 1722 f).

This species has the general appearance of *L. reuteri* Champ. from which it may readily be distinguished by its slightly larger size, the differently colored head, pronotum, hemelytra, etc.

***Lasiochilus mirificus*, n. sp.**

Moderately large, oblong-ovate, yellowish to testaceous, shiny, rather densely clothed with fine sub-erect hairs. Head broader than long, slightly rugulose in front of eyes. Eyes moderately large, inconspicuous. Ocelli far apart. Antennae pale testaceous, clothed with long, very fine hairs; segment I scarcely reaching apex of head, thick; II enlarged toward apex; the proportional length of the segments—I: II: III: IV:: 4: 9: 10: 11. Rostrum reaching almost to end of mesosternum, segment I attaining the apex of the eyes, II extending to the anterior coxae.

Pronotum rather strongly narrowed anteriorly, somewhat shiny, finely and rather indistinctly rugulose, with a short fairly distinct fovea on the base of the anterior lobe, the lateral margins ciliate, the base broadly emarginate. Scutellum with the basal half smooth, the depressed apical half rugulose. Hemelytra rather densely clothed with fine pale hairs; the embolium rounded at inner apical angle. Membrane hyaline. Legs yellowish. Ostiolar canal short, distinctly curved posteriorly. Body beneath testaceous, clothed with fairly long hairs. Length 2 mm., width .79 mm.

Holotype: female, Brownsville, Texas, May 7, 1904, H. S. Barber, collector, type #29147, U. S. National Museum. *Paratype*: female, taken with type.

This species falls in group *a* in Champion's key to the Central American forms. It may readily be separated from related forms by the rounded apex of the embolium.

***Lasiochilus divisus* Champion.**

One specimen of this distinct species is at hand from Canal Point, Florida, collected Feb. 14, 1924, by W. F. Ourey. Other specimens from Guatemala, Porto Rico and Canal Zone, Panama, have been examined.

***Lasiochilus fuscus* Reuter.**

One specimen, Charleston, Mississippi, Sept. 10, 1925, H. M. Harris, collector, and one specimen Decherd, Tenn., Aug. 18, H. S. Barber, collector.

***Lasiochiloides socialis*, n. sp.**

Elongate, nearly parallel, rufo-piceous; the head, pronotum, and basal portion of scutellum faintly tinged with ferrugineous. Head broad, antecular portion short, anteriorly narrowed. Eyes large, reddish, widely separated. Ocelli prominent. Antennae flavotestaceous, clothed with long hairs (the basal segments more sparingly); segment I reaching apex of head; II moderately enlarged towards apex; III and IV very slender; the proportional length of the segments—I: II: III: IV:: 6: 16: 12: 13. Rostrum long, segment I reaching to middle of eyes, II not quite reaching past the anterior coxae, III extending to middle of mesosternum.

Pronotum shiny, narrowed anteriorly; the disc indistinctly rugulose, narrowly longitudinally depressed through the middle; the posterior portion transversely rugulose, depressed on the disc; sides margined (much more widely anteriorly), sinuate; collar short; the base broadly and roundly emarginate. Scutellum shiny at the base, dull at the apex, the depressed apical part finely rugulose. Hemelytra dull, moderately hairy, sparsely and finely punctured, the punctures arranged in distinct rows on outer and inner margin of clavi. Membrane slightly smoky. Legs brownish, the tibiae and tarsi lighter; femora incrassate, the anterior ones more strongly so and these armed beneath with short, piceous teeth. Ostiolar canal moderately long, distinctly curved anteriorly. Body beneath reddish brown, the apex of the abdomen clothed with several long hairs. Length 2.55 mm., width .84 mm.

Holotype: male, Valles, Mexico, January 18, 1909, collected on growing corn, in authors' collection.

This species is close to *L. denticulatus* Champ. from which it may readily be separated by its narrower form, larger eyes and differently colored antennae and hemelytra.

***Plochiocoris comptulus*, n. sp.**

Elongate, subparallel, shiny, rather sparsely clothed with long semi-erect hairs which are most numerous along the sides of the hemelytra. Head smooth, shiny, the basal portion dark rufo-piceous, the antecular portion brownish. Eyes dark, coarsely granulate, prominent. Ocelli pale, rather conspicuous. Antennae long, thickly clothed with long hairs, segments I and II stout; I scarcely reaching beyond the apex of the head; II very long, sub-cylindrical, the apical one-third slightly enlarged; III very slender; IV wanting; proportion of segments—I: II: III:: 7: 30: 16. Rostrum long, extending to slightly beyond intermediate coxae, segment II very long, about four times as long as I.

Pronotum as in *P. longicornis* Champ. except that it is brownish-testaceous and angularly emarginate behind. Scutellum testaceous, the apical portion depressed and rugulose. Hemelytra testaceous, the inner margin of the clavus and the outer margin of the cuneus faintly tinged with red; embolium narrow at base, strongly widened toward the apex and there almost as wide as the corium, the inner apical angle rounded. Membrane hyaline, with two distinct nervures. Legs testaceous, the femora slightly darker. Ostiolar canal sloping slightly backward, the apical portion

faintly anteriorly curved. Body beneath brownish, the sides and margins of the abdominal segments somewhat testaceous. Length 2.7 mm., width .89 mm.

Holotype: male, Brownsville, Texas, May 16, 1904, H. S. Barber, collector. Type #29148, U. S. Nat. Museum.

***Lasiocolpus minor* Champion.**

Three specimens, Cacao, Trece Aguas, Alta V. Pas, Guatemala, April 5, April 19, and March 29, Schwarz and Barber, collectors.

These specimens differ from Champion's description in having the first and second antennal segments more or less brownish instead of entirely testaceous.

***Xylocoris betulinus*, n. sp.**

Closely related to *X. galactinus* Fieb. from which it may readily be distinguished by the much broader pronotum which has the posterior lobe distinctly depressed.

Antennae yellowish-brown, moderately hairy; segment I not quite reaching apex of head; II slightly thickened towards apex, a little longer than III or IV; the proportion—I: II: III: IV:: 7: 18: 15: 16. Rostrum yellowish brown, stout, reaching to the mesosternum, segment I reaching almost to posterior margin of eye, II longer, sub-attaining anterior coxae. Pronotum moderately clothed with short, prostrate, golden hairs which are quite numerous on the sides; anteriorly narrowed, in front distinctly wider than head through eyes, behind broadly and roundly but not deeply excavated; the posterior lobe depressed and finely rugulose. Scutellum strongly depressed on posterior half. Hemelytra testaceous; membrane hyaline. Legs stout, femora fuscous, anterior ones strongly incrassate, the posterior ones less strongly incrassate; tibiae and tarsi brownish, the anterior tibiae very strongly enlarged toward their apices. Ostiolar canal, long, posteriorly curved to middle of its length, then strongly anteriorly curved, the apex reaching front margin of meso-pleuron. Body beneath dark fuscous. Male clasper long, stout, curved. Length, 2.6 mm., width 1.0 mm.

Holotype: male, Cranberry Lake, N. Y., June 23, 1919. C. J. Drake, collector, taken in burrow of American timber worm, *Hylecoetus lugubrius* Say, on fallen yellow birch; in authors' collection.

***Asthenidea temnostethoides* Reuter.**

Batavia, N. Y., Aug. 8, 1914, H. H. Knight; Cranberry Lake, N. Y., Sept. 16, 1917, and Aug. 5, 1920, C. J. Drake, collector; Anna, Illinois, June 27, 1909, taken sweeping; Dubois, Ill., July 3, 1909, Miami, Florida, Dec. 20, 1912, Fred Knab, collector; Marathon, Fla., May, 1919, Barber and Schwarz; Paradise Key, Fla., Feb. 23, 1919, Schwarz and Barber; Kerryville, Texas, June 19, 1907, F. C. Pratt, collector.

***Macrotracheliella laevis* var. *floridana*, n. variety.**

Rufo-piceous, shining, almost destitute of hairs. Antennae moderately clothed with short hairs, rufopiceous, segment III flavous; I scarcely reach-

ing apex of head; II enlarged towards apex; III and IV slender, fusiform; the length of the segments in the proportion—I:II:III:IV:: 6:15:13:13. Rostrum reaching to anterior coxae, segment II extending to the base of the prosternum.

Pronotum shiny, strongly narrowed anteriorly, the front lobe forming a continuous outline with the long posterior lobe of the head, the sides distinctly margined, the base broadly and roundly emarginate. Scutellum depressed apically, clothed with a few short fine hairs. Hemelytra considerably longer than the abdomen, the clavus (borders excepted) pale whitish; membrane smoky, hyaline, the basal margins somewhat paler. Length 2.5 mm., width .81 mm.

Holotype: female, Key West, Florida, March 30, 1912, reared from nymph taken in gall of thrips on *Ficus indica*, E. A. Schwarz. Type #29149, U. S. Nat. Museum. *Paratype*: female, Key West, Florida, June 4, 1905, Fred. Knab, collector.

This form differs from typical *M. laevis* Champ. in having the entire third antennal segment flavous and the clavus (margins excepted) whitish. Three nymphs taken with holotype are at hand.

Xenotrachelia, n. genus.

Body oblong, smooth, almost destitute of hairs. Head shiny, ante-ocular portion longer than post-ocular portion; eyes large in the male, smaller in the female; ocelli far apart; antennae long, stout, segment I reaching apex of head, II very long, subequal to head in length, enlarged towards the apex, III and IV stout, together slightly longer than II. Rostrum long, reaching beyond prosternum, segment I reaching to middle of eyes. Pronotum shiny, narrowed anteriorly, deeply transversely depressed (furrow-like) at about the middle, narrowly margined along the sides, truncate in front and emarginate behind. Hemelytra reaching to apex of abdomen, embolium narrow; membrane sub-hyaline, with four nervures, the inner ones indistinct. Scutellum depressed on apical half and transversely rugulose there. Mesosternum strongly developed. Legs stout, anterior coxae placed close together, intermediate and posterior ones far apart. Ostiolar canal sloping obliquely forward and slightly curved.

This genus has its greatest affinities with *Macrotrachelia* Reut. and *Macrotrachelia* Champ. from which it may be distinguished by the differently formed head, pronotum, elytra, ostiolar canal, etc.

Type of genus, *Xenotrachelia inimica*, n. sp.

Xenotrachelia inimica, n. sp.

Oblong, dark brown to fuscous black, hemelytra conspicuously marked with whitish, the second antennal segment, the base of the third, and the tarsi flavotestaceous. Head dark brown, shiny, finely rugulose, the apex annulate; its length one-third greater than width through eyes. Eyes small, reddish, finely granular. Ocelli inconspicuous, widely separated. Antennae stout, rather thickly clothed with short stiff, whitish hairs; dark brown, the entire second segment testaceous; segment I hardly reaching apex of head; II swollen towards the apex; III and IV stout, fusiform;

the proportional length of the segments—I:II:III:IV:: 8:29:15:16. Rostrum dark brown, reaching to the apex of mesosternum, segment I extending almost to the middle of the eyes, II to near the middle of the mesosternum.

Pronotum shiny, narrowed anteriorly, the sides strongly sinuate, the base broadly emarginate, the lateral margins narrowly reflexed; deeply and transversely depressed just behind the middle, the apical collar and the disc of the posterior lobe finely rugulose. Scutellum shiny, the apical half depressed, black, and finely rugulose. Hemelytra brownish, the clavus, except at base, apex, and along commissure, and a transverse fascia at apex of corium (not extending entirely across) whitish; the embolium angular at apex. Membrane hyaline, its middle indistinctly clouded toward apex; with four unbranched nervures. Legs dark reddish brown, the tarsi lighter; the femora incrassate. Ostiolar canal slanting obliquely forward, the apex subangularly curved. Body beneath dark reddish brown, the apex of the venter blackish, with a few long whitish hairs. Length 2.85 mm., width .85 mm.

Described from a single specimen, female, Taghanic, Ithaca, New York, July 2, 1920, in authors' collection.

***Xenotracheliella vicaria*, n. sp.**

Form and general appearance similar to *X. inimica*, n. sp. Head brownish black, the apex lighter, the anterior portion considerably longer than the posterior portion. Eyes large, much more prominent than in *inimica*. Ocelli very prominent, placed far apart. Antennae stout, dark brown tinged with ferrugineous, thinly clothed with numerous short, very fine hairs; segment I smooth, almost reaching apex of head; II long, very stout, slightly thickened distally, its length about equal to that of head; III and IV more slender, the two conjoined not as long as II; the proportion—I:II:III:IV:: 7:26:11:13. Rostrum long, reaching slightly beyond metasternum, segment I reaching middle of eyes, II to base of mesosternum.

Pronotum piceous, shiny, strongly narrowed anteriorly, finely transversely rugulose and closely pitted in the depressions, the sides distinctly margined, the base broadly emarginate, the disc strongly transversely depressed through the middle. Scutellum piceous, strongly impressed on apical half, the impressed portion finely and very closely pitted, the apical one-half tumid, smooth, shiny. Hemelytra fuscous to piceous, the clavus pale testaceous with its inner margin piceous; embolium narrow, the apex sub-angulate. Legs piceous, with a brownish tinge, the tarsi slightly lighter. Ostiolar canal slanting obliquely forward, sub-angularly curved at the apex. Body beneath dark reddish brown, the apex of the abdomen clothed with a few long hairs. Length 2.87 mm., width 1 mm.

Holotype: male, Marquette, Michigan, August 28, 1888, in the collection of the authors.

Although this form resembles *X. inimica*, n. sp., it seems desirable to consider it distinct rather than as a male of that species because of its less flattened body, slightly larger size, less widely separated ocelli, longer second rostral segment, differently shaped pronotum, and differently colored hemelytra and second antennal segment, etc.

***Xenotracheiella oculata*, n. sp.**

General form and shape similar to *X. vicaria*, n. sp., but broader, without conspicuous color markings on hemelytra, the eyes larger, the ocelli more profoundly raised, and the second antennal segment distinctly shorter and more slender.

Head, pronotum, and scutellum rufo-piceous, shiny; with a few fine, very short pale hairs; head longer than broad, the anterior lobe distinctly constricted just past the middle. Eyes very large. Ocelli strongly raised, very prominent. Antennae dark brown, clothed with short whitish hairs; segment I extending to apex of head; II moderately stout, faintly enlarged distally; III and IV wanting; the proportional lengths of the segments—I: II:: 6: 23. Rostrum dark fuscous, reaching a little beyond middle of mesosternum, segment I extending to middle of eyes, II to apex of anterior coxae.

Pronotum strongly narrowed anteriorly, the sides sinuate and narrowly margined, the collar short, the posterior lobe set off by a wide transverse depression and with anterior lobe distinctly pitted. Scutellum depressed on apical half, pitted. Hemelytra pale brown, narrowly margined with rufo-piceous; the cuneus somewhat darkened distally; the membrane subhyaline. Legs rufo-piceous, the tibiae and tarsi much lighter. Ostiolar canal slightly sloping forward, the apex faintly curved and ending in a thin carina which extends to the anterior margin of the metapleuron. Body beneath rufo-piceous, the segments of the venter margined with lighter. Length 3.62 mm., width 1.19 mm.

Holotype: male, Williams, Arizona, June 30, Barber and Schwarz, collectors, type #29150, U. S. Nat. Museum.

***Temnostethus fastigiatus*, n. sp.**

Moderately large, shiny, brownish black with brown or pale markings, very sparsely clothed above with short yellowish hairs. Head dark brown, somewhat shining. Eyes moderately prominent, quite distant from pronotum. Ocelli small, inconspicuous. Antennae reddish brown, moderately pilose; segment I very short, not reaching apex of head; II quite long, slightly enlarged towards the apex; III more slender than II and about one-half as long; IV wanting; proportion I: II: III:: 8: 25: 12. Rostrum extending to end of mesosternum, segment I reaching to middle of eyes, II almost to intermediate coxae.

Pronotum moderately narrowed anteriorly, very finely and closely pitted; strongly depressed and rugose on posterior lobe, the disc slightly swollen; the collar distinct, tinged with brownish yellow; the lateral margins sinuate, strongly reflexed, the base roundly emarginate. Scutellum rugulose, the apical portion slightly depressed and pitted. Hemelytra short, covering basal half of abdomen, brownish to fuscous, the basal portions of embolium and corium and the inner margin of clavus pale yellow. Membrane short, hyaline. Legs reddish brown, the femora swollen; intermediate coxae widely separated, the posterior ones more widely separated. Metasternum truncate at apex. Ostiolar canal short, stout, nearly straight, the apex faintly turned backwards. Length 2.66 mm., width .95 mm.

Holotype: Brachypterous female, Santa Cruz Mountains, California, type #29151, U. S. Nat. Museum. *Allotype*: Male, Morgan Hill, California, May 23, 1922, E. O. Essig, collector. *Paratypes*: female, taken with type, and female, Cayton, Shasta Co., Cal., July 13, 1913, E. P. Van Duzee, collector.

This is the first American record for the genus *Temnostethus*. The shape of the pronotum, the position of the eyes, the characters of the rostrum and metasternum, and the widely separated coxae readily separates the genus from related genera.

Acompocoris feratis, n. sp.

Elongate-ovate, piceous brown, the hemelytra somewhat testaceous brown; rather thickly clothed with moderately short, slightly curled, whitish pubescence. Head dark rufo-piceous, distinctly longer than width through eyes, shiny. Eyes reddish. Ocelli prominent. Antennae rather stout, clothed with short stiff hairs; segment I distinctly not reaching to apex of head; II longer than width of head through eyes; III two-thirds as long as II; IV missing; the proportion—I: II: III:: 8: 29: 17. Rostrum extremely long, reaching considerably beyond middle of venter, segment I extending to the base of the eyes, II to fourth abdominal segment.

Pronotum strongly narrowed anteriorly; the sides narrowly margined, rounded in front, the anterior lobe raised, shiny; the posterior lobe set off by a deep transverse depression, rugulose, broadly and roundly excavated behind. Scutellum large, depressed behind and finely rugulose. Hemelytra more or less variegated with yellowish. Membrane smoky. Legs brownish, femora somewhat darkened. Ostiolar canal nearly straight, faintly curved anteriorly. Body beneath reddish brown. Length 3.4 mm., width 1.5 mm.

Holotype: male, Kaslo, British Columbia, in collection of the writers. The extremely long rostrum easily distinguishes this species from any species of the genus known to the authors.

Tetraphleps novitus, n. sp.

Obovate, moderately clothed with short, prostrate, whitish, scale-like hairs; head, pronotum, and scutellum black, the elytra brown. Head broad, as long as width through eyes. Eyes large, reddish black. Ocelli prominent, reddish. Antennae moderately long, clothed with a few whitish hairs; segment I dark brown to black, thick, not quite reaching apex of head; II brownish to black, gradually thickened distally; III and IV black, subequal in length, together a little longer than III; the proportion—I: II: III: IV:: 6: 18: 10: 12. Rostrum brownish to black, reaching between anterior coxae, segment I short, not reaching insertion of antennae, II long, reaching slightly beyond apex of prosternum.

Pronotum finely and transversely rugulose, broadly and shallowly excavated behind, transversely depressed between anterior and posterior lobes, the sides slightly narrowed and strongly margined anteriorly, in front broader than the head measured through the eyes. Ostiolar canal

straight, faintly backwardly projecting, its apex distinctly raised. Scutellum strongly depressed and rugulose apically. Elytra considerably longer than abdomen, the scale-like hairs arranged in rather definite rows the punctures fairly distinct. Membrane somewhat smoky, with four prominent veins. Wings almost as long as elytra, the cell with a hamus. Legs brownish black, the tibia and tarsi lighter. Body beneath black. Length 3.4 mm., width 1.28 mm.

Holotype: female, taken on pine, Stonewall, Trinidad, Colo., 9000 ft. alt., Aug. 8, 1925, by C. J. Drake. *Allotype*: same locality as holotype, H. H. Knight, collector. *Paratypes*: several females and males taken with the types, and one female Estes Park, Colo., Aug. 24, 1925, H. H. Knight, collector. In the male the second antennal segment is considerably thicker and more swollen distally than in the female. Holotype and allotype in writers' collection. Paratypes in collection of U. S. Nat. Museum, Iowa State College, Colorado Agr. College, H. H. Knight, and the authors.

***Tetraphleps pingreensis*, n. sp.**

Closely allied to *T. novitus*, n. sp. but smaller, darker, and with a much longer rostrum. Pronotum much shorter, not so strongly margined anteriorly, and behind more roundly excavated. The elytra dark brown, much darker than in *novitus*. Rostrum attaining the intermediate coxae; segment I reaching apex of eyes; segment II to the anterior coxae. Antennal proportions and ostiolar canal as in *novitus*. Length 3 mm., width 1.19 mm.

Male smaller, lighter in color, perhaps due to the fact that it is somewhat immature.

Holotype: female, Estes Park, Colo., Aug. 24, 1925, H. H. Knight, collector. *Allotype*: Pingree Park, Colo., Aug. 20, 1925, C. J. Drake, collector, taken on pine. Types in authors' collection.

***Tetraphleps profugus*, n. sp.**

Elongate-ovate, brownish, the head, anterior lobe of pronotum and the scutellum black, shiny, moderately thickly clothed with short, slightly recurved yellowish pubescence. Head measured through eyes broader than long. Eyes large, reddish. Ocelli placed far apart. Antennae dark reddish brown; segment I reaching faintly beyond the apex of the head; II swollen distally, its length equal to length of head to collum; III about one-half as long as II; IV wanting; the proportion—I: II: III: 7: 22: 12. Rostrum reaching to anterior coxae, segment I not attaining the insertion of the antennae, II reaching a little beyond base of head.

Pronotum transversely rugulose, considerably narrowed anteriorly, the apex about as wide as head through eyes, the explanate lateral margins widened anteriorly, the base broadly and roundly emarginate. Scutellum depressed and transversely rugulose from the middle backwards. Hemelytra coarsely punctate, testaceous brown. Legs reddish brown. Ostiolar canal straight. Body beneath reddish brown, clothed with rather long silvery hairs. Length 3.62 mm., width 1.49 mm.

Holotype: male, Kaslo, British Columbia, in writers' collection.

This form has the general appearance of *Acompocoris feratis*, n. sp., from which it may be separated by the generic characters, the differently formed pronotum, and the yellowish hairs on the scutellum and hemelytra.

***Tetraphleps edacis*, n. sp.**

Obovate, moderately thickly clothed with slightly curved whitish pubescence; black, head with a brownish tinge; elytra brownish, slightly variegated with yellowish; membrane pale, with broad brownish streaks along the nervures. Head shiny, longer than wide (through eyes), the apex subclavate. Eyes dark reddish, moderate in size. Ocelli prominent, placed far apart. Antennae fuscous; segment I not reaching apex of head; II faintly thickened towards apex, in length subequal to width of head through eyes; III and IV about equal in length; all clothed with fine, short, pale hairs; the proportion—I: II: III: IV:: 7: 22: 13: 13. Rostrum dark brownish, reaching almost to intermediate coxae, segment I extending to apex of eyes, II slightly surpassing the anterior coxae.

Pronotum shiny, finely punctured and transversely rugulose; moderately narrowed anteriorly, the apex slightly wider than head through eyes; broadly and roundly excavated behind; the reflexed lateral margins distinct but not broad. Scutellum shiny, the apical part depressed and rugulose. Hemelytra moderately shiny, brownish fuscous, finely punctured. Legs dark brownish, the apices of the femora and the tibia and tarsi lighter. Ostiolar canal nearly straight (faintly curved anteriorly). Body beneath black. Length 3.66 mm., width 1.7 mm.

Holotype: female, The Plains, Wanakena, New York, Aug. 3, 1920, C. J. Drake, taken on *Larix laricina*, in collection of writers.

This species resembles *Acompocoris* (*Tetraphleps*) *osborni* Drake, from which it may be separated by the darker hemelytra, the shorter rostrum and the form of the ostiolar canal.

***Paratriphleps laeviusculus* Champion.**

Four specimens, three males, Tegucigalpa, Honduras, Feb. 10, 1918, F. J. Dyar, collector.

The males differ from Champion's description and the female before us in having the hemelytra more uniformly colored and only the sutures between the corium and clavus and between corium and embolium darkened. The apical half of each of the last three antennal segments is brownish.

***Scoloposcelis mississippiensis*, n. sp.**

Elongate, flattened, rufo-fuscous. Head distinctly longer than broad, shiny, faintly rugulose. Eyes large, reddish. Ocelli prominent. Antennae rather stout, flavotestaceous, darkened toward the base, clothed with numerous long hairs; segment I short, hardly reaching apex of head; II three times as long as I, moderately swollen apically; III and IV slender, sub-equal in length, each two-thirds as long as II; the proportion—I: II: III: IV:: 6: 20: 13: 13. Rostrum extending to posterior coxae, segment I reaching to about middle of eyes, II more than twice as long as I and sub-equal to I and III together.

Pronotum shiny, trapeziform, moderately narrowed anteriorly, the sides slightly sinuate and distinctly margined, the base deeply emarginate; posterior lobe rugulose, somewhat flattened, the longitudinal sulcus indistinct. Scutellum concolorous with pronotum, finely rugulose. Hemelytra pale, the inner margin of the clavus and the entire embolium and cuneus fuscous, opaque; membrane clear, hyaline. Wing cell without a hamus. Legs stout, the anterior and posterior femora greatly and equally incrassate, strongly compressed laterally, the anterior ones armed beneath with a double row of short black teeth; apex of femora and tibiae and tarsi flavotestaceous. Ostiolar canal very long, sloping anteriorly, the apical half curved.

Male with genital segment clothed with numerous long, gray hairs; clasper large and prominent. Female with a few scattered hairs at tip of abdomen. Length 2.76 to 3 mm., width .80 mm.

Five specimens, Port Gibson, Mississippi, July 22, 1921. Taken by C. J. Drake from burrows of barkbeetles (*Ips* spp.) in long-leaf pine. The tree from which the specimens were taken had been felled in 1920 and the top was heavily infested with several species of barkbeetles. Only a few adults of *S. mississippiensis* were found. The nymphs were numerous. The insect is quite active. It apparently feeds on the larvae of barkbeetles. *Holotype*, male, and *allotype*, female, in authors' collection.

This species differs from *S. flavicornis* Reut. in having the pronotum broader anteriorly, the elytra much shorter, and the anterior and posterior femora equally incrassate.

Last (5th ?) nymphal instar: Reddish; antennae, tibiae, tarsi and wing-pads pale. Anterior and posterior femora strongly incrassate and laterally compressed. Pronotum slightly narrowed anteriorly, margined, two-thirds broader than long, the median longitudinal sulcus distinct. Antennae stout, clothed with numerous rather long stiff hairs; segment II longest; III slightly shorter than IV.

4th (?) instar: The antennae are considerably shorter than in the last instar nymph, segment II and IV are sub-equal, each slightly longer than III. Wing-pads very small. Rostrum reaching to intermediate coxae.

Scoloposcelis basilicus, n. sp.

Elongate, narrow, the hemelytra subparallel, shiny. Head rufo-fuscous, faintly rugulose behind, short, broad, the length scarcely greater than width through eyes. Eyes reddish, moderately large. Ocelli pale, conspicuous. Antennae flavotestaceous, short, clothed with moderately short stiff hairs; segment I pale brown, almost reaching to apex of head; II distinctly enlarged towards apex, not so stout as I; III faintly thickened distally; IV not quite equal to and more slender than III; the proportion— I: II: III: IV:: 6: 14: 9: 9. Rostrum stout, reaching to a little beyond anterior coxae, segment I extending almost to middle of eyes, II to between anterior coxae.

Pronotum rufo-testaceous, considerably narrowed anteriorly, the sides almost straight and faintly margined; the posterior lobe depressed, trans-

versely rugulose, broadly emarginate behind; smooth on the disc and sides and rugulose on the collar and base. Scutellum smooth and shiny on base, rugulose on apical half. Elytra rufo-testaceous, with a broad band on basal part testaceous to whitish; the clavus and corium subhyaline, embolium narrow to the apex. Membrane somewhat smoky, sub-hyaline. Legs shorter than in other American species; the tibiae and tarsi flavo-testaceous, the femora brownish. Ostiolar canal long, strongly and evenly curved anteriorly. Body beneath brownish, more or less tinged with paler. Length 2.87 mm., width .81 mm.

Holotype: female, Peloncillo, National Forest, New Mexico, on oak, J. L. Webb, collector. *Allotype*: male, Chiricahua Mountains, Arizona, J. L. Webb, collector. Types #29152, U. S. National Museum. *Paratypes*: taken with types, and Capitan Mountains, Boreal, N. Mexico, in collections of U. S. Nat. Museum and authors.

***Scoloposcelis discalis* Van Duzee.**

Flagstaff, Arizona, July 7, collected by Barber and Schwarz.

***Scoloposcelis occidentalis*, n. sp.**

Differing from *S. discalis* Van Duzee in its larger size, longer antennae, much longer rostrum, and narrower embolium. Head rufo-piceous, broad, convex above. Eyes moderately large. Ocelli widely separated, inconspicuous. Antennae brown, clothed with a few short hairs, segment I not quite attaining apex of the head; II slightly clavate, distinctly longer than width of head through eyes; III and IV more slender, clothed with longer hairs; the proportion—I: II: III: IV :: 7: 19: 12: 13. Rostrum long, brownish testaceous, lighter at apex, segment I extending to middle of eyes, II to apex of anterior coxae, III to intermediate coxae.

Pronotum shiny, rufo-piceous, finely rugulose, strongly narrowed anteriorly, somewhat depressed back of disc, the sides nearly straight and distinctly margined, the apex slightly emarginate, the base deeply and roundly excavated. Scutellum smooth on the base, the apical one-third depressed and rugulose. Hemelytra testaceous to flavotestaceous, the cuneus fuscous, the embolium narrow, at apex less than one-half width of corium, pale brown; membrane pale, sub-hyaline. Legs brownish testaceous, the tibiae and tarsi lighter. Ostiolar canal long, more prominent than in *mississippiensis*, strongly curved anteriorly, almost reaching to anterior margin of meta-pleuron. Body beneath reddish brown to fuscous. Length 3.3 mm., width 1.05 mm.

Holotype: female, Ventura County, California, type #29153, U. S. Nat. Museum.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

THE COLLARED PECCARIES OF MIDDLE AMERICA.

BY E. A. GOLDMAN.

The collared peccaries of Central America occupy the lowlands from sea to sea and ascend in places on the tropical or subtropical slopes of mountains to over 6,000 feet altitude. In southern Mexico, however, this general transcontinental range is split by the southward, wedgelike extension of the central highlands and continues thence northward in diverging branches along the eastern and western seaward slopes to extreme northern limits in southern Texas and southern Arizona, where the Lower Austral Life Zone is invaded.

Comparison of specimens from numerous localities indicates that all the continental Middle American forms of the genus are closely allied. Each differs from the others in varying combinations of size, color, and rather slight cranial details. The northern races, inhabiting more arid, partially open regions, are generally pale in color, with distinct black dorsal stripes and heavy dentition. Those inhabiting the heavily forested regions from southern Mexico to Panama are, on the other hand, characterized by more uniformly dark colors and somewhat weaker dentition. General agreement in important characters thus justifies the conclusion that all probably intergrade and may properly be regarded as subspecies of *Pecari angulatus*, the relationship of which to South American species remains to be determined. *Pecari nanus*, an insular form of this group, exhibits so wide a departure, especially in size, from the continental members of the genus that it must be accorded specific distinction.

The collared peccaries of Middle America, with two new subspecies described beyond will, therefore, stand as follows:

<i>Pecari angulatus angulatus</i> (Cope).....	Guadalupe River, Texas.
<i>Pecari angulatus sonoriensis</i> (Mearns).....	San Bernardino River (near monument No. 77, Mexican boundary line), Sonora, Mexico.
<i>Pecari angulatus humeralis</i> (Merriam).....	Armeria, Colima, Mexico.
<i>Pecari angulatus crassus</i> (Merriam).....	Metlaltoyuca, Puebla, Mexico.
<i>Pecari angulatus yucatanensis</i> (Merriam).....	Tunkas, Yucatan, Mexico.
<i>Pecari angulatus crusnigrum</i> (Bangs).....	Boquete, Chiriqui, Pana- ma.
<i>Pecari angulatus bangsi</i> Goldman.....	Boca de Cupe, eastern Panama.
<i>Pecari angulatus nelsoni</i> , subsp. nov.....	Huehuetan, Chiapas, Mexico.
<i>Pecari angulatus nigrescens</i> , subsp. nov.....	Chamelicon, Honduras.
<i>Pecari nanus</i> (Merriam).....	Cosumel Island, Yucatan, Mexico.

DESCRIPTIONS OF NEW FORMS.

***Pecari angulatus nelsoni*, subsp. nov.**

NELSON'S COLLARED PECCARY.

Type from Huehuetan (altitude 500 feet), Chiapas, Mexico. No. 77,865, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by E. W. Nelson and E. A. Goldman, February 24, 1896. Original number, 9381.

Distribution.—Forests of southern Chiapas, Mexico, and doubtless adjoining parts of Guatemala.

General characters.—A large dark form without distinct dorsal stripe. Somewhat similar to *Pecari angulatus crusnigrum* of Panama in color, but less tawny, and skull relatively narrower, more elongated. Similar in general to *P. a. humeralis*, but color darker, more tawny, and cranial characters distinctive. Shoulder stripe, or collar, rather well developed as a light tawny band.

Color.—Type: General body color coarsely mixed, or grizzled, black and light tawny, the latter element varying to rich ochraceous buffy along flanks, becoming more grayish along median line of back; rump bristles with very long black tips obscuring the lighter under color; head more finely grizzled black and light tawny; cheeks ochraceous buffy; upper side of muzzle blackish; feet black. In a topotype the lighter element in the pelage inclines to ochraceous buffy, the general tone less tawny than in the type.

Skull.—Similar in general to that of *P. a. crusnigrum*, but relatively longer and narrower; frontal region and braincase narrower; dentition similar. Compared with that of *P. a. humeralis* the skull is relatively longer and narrower, the rostrum more elongated; postorbital processes less prominent; diastema longer; molariform tooththrows narrower.

Measurements. Type: Total length, 970; hind foot, 192. An adult female topotype: 1020; 224. *Skull* (type): Greatest length (lateral expansion of lambdoid crest to front of incisors), 250; condylobasal length, 204.5; zygomatic breadth, 103.2; interorbital breadth, 49.9; breadth across postorbital processes, 66.2; maxillary tooththrow, 64.4.

Remarks.—In general characters *P. a. nelsoni* somewhat approaches *P. a. humeralis*, specimens of which are now available from various localities representing a rather wide range along the western slope of Mexico. It differs notably, however, in darker coloration, with the absence of a distinct dorsal stripe and in this respect more nearly resembles *P. a. crusnigrum*. A female topotype is larger, and the lighter element in the pelage is less tawny, or rusty reddish than in the type.

Specimens examined.—Two, from the type locality.

***Pecari angulatus nigrescens*, subsp. nov.**

HONDURAS COLLARED PECCARY.

Type from Chamelicon, Honduras. No. 148,735, ♀ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by H. S. Reed, March 10, 1901. X catalogue number 6416.

Distribution.—Northwestern Honduras to northern Guatemala and eastern Quintana Roo.

General characters.—A medium-sized dark form without distinct dorsal stripe. Similar to *Pecari angulatus yucatanensis*, but larger and general color uniformly much darker; cranial characters differing in detail. In general color somewhat resembling *P. a. nelsoni*, but lighter under tone more grayish; skull smaller, shorter, and relatively broader, with molari-form tooththrows decidedly shorter. Similar in general to *P. a. crusnigrum*, but lighter element in pelage buffy or grayish instead of tawny, and dentition lighter.

Color.—Type: Upper and under parts in general very light ochraceous or pinkish buffy, varying to grayish on lower part of back, coarsely mixed or heavily overlaid with black; chin and median line of under parts blackish; muzzle above, and feet black. Shoulder stripes light buffy, but rather narrow and indistinct.

Measurements.—Type: Total length, 890; hind foot, 180. *Skull*: Greatest length, 238.5; condylobasal length, 199; zygomatic breadth, 99.8; interorbital breadth, 56.1; breadth across postorbital processes, 72.7; maxillary tooththrow, 58.2.

Remarks.—This dark subspecies is apparently most closely allied to *P. a. yucatanensis*, but is readily distinguished by the decidedly darker color due to the more uniform distribution of hairs with long black tips. A specimen from the semi-humid forest at La Vega, eastern Quintana Roo shows gradation toward the paler *yucatanensis* which inhabits the arid sections of Yucatan.

Specimens examined.—Total number, 6, from localities as follows:

Honduras: Chamelicon (type locality), 2.

Guatemala: Peten, 3.

Quintana Roo: La Vega, 1.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW *STYLOSANTHES* FROM BRITISH HONDURAS.

S. F. BLAKE.

In a collection of plants recently made in British Honduras by Prof. Samuel J. Record of Yale University there occurs a species of the leguminous genus *Stylosanthes* closely similar in general appearance to *Stylosanthes hamata* (L.) Taub., but with shorter beak to the fruit and without trace of the plumose axis-rudiment so well developed in *S. hamata*. The absence of the axis-rudiment (the "seta plumosa" of Taubert's monograph) places the plant in the subgenus *Eustylosanthes*, where it seems clearly distinct from any described species. It may be known as

Stylosanthes ingrata Blake, sp. nov.

Young branches densely ascending-pilose, the older glabrescent; leaflets linear-elliptic, up to 17 by 3 mm., cuspidate, not strongly veiny, sparsely pilosulous beneath, sparsely ciliate; spikes short and narrow; bracts villous, sparsely setose, the setae blackish-based; basal joint of pod rudimentary; terminal joint oblong, compressed, the body 3-3.5 mm. long, 1.8-2 mm. wide, appressed-pubescent, 1-nerved on each side and loosely reticulate, the incurved-uncinate obscurely pubescent beak 1.8 mm. long.

Base not seen; stems erectish-branched, about 18 cm. high, at first densely whitish-pilose all around with mostly ascending hairs with slender dark bases, in age usually glabrate except for the spreading dark bases of the hairs; internodes 1-2.5 cm. long; sheaths of the stipules 4-7.5 mm. long, pilose like the stem and with a few setae (blackish-brown at base, yellowish passing to white above), the teeth subulate, stiff, about 4 mm. long; petioles pilose, 4-7 mm. long, the rachis about 1.5 mm. long; leaflets short-petiolulate, linear-elliptic or narrowly lance-elliptic, 11-17 mm. long, 1.5-3 mm. wide, acuminate, cuspidate, truncate-rounded at base, obscurely incurved-puberulous or nearly glabrous above, sparsely incurved- or ascending-pilosulous especially along the costa beneath, inconspicuously ciliate with soft hairs, the lateral veins about 5 pairs, not prominent;

spikes 1- (at length) 1.8 cm. long, slender, about 7-flowered, not crowded into heads; primary bracts unifoliate, the sheath about 4 mm. long, oblong, pubescent like the leaf sheaths, the teeth triangular, 2-3 mm. long, the blade 8 mm. long or less, on a narrowly winged petiole about 2 mm. long; secondary bract 1, hyaline, 2-parted, ciliate above, acuminate, 3 mm. long; bractlet 1, linear-lanceolate, equaling the secondary bract; calyx 6.5 mm. long (including the stipe-like base, this 2.8 mm. long), the lobes ciliate; corolla yellow, 6.5 mm. long.

British Honduras: Vaca Falls district, Feb., 1926, *S. J. Record* (type No. 1,209,860, U. S. Nat. Herb.).

Distinguished among the species of its section by its fruit.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW TAILLESS AMPHIBIANS FROM WESTERN
CHINA.

BY LEONHARD STEJNEGER.

During his trip to Sungpan, Szechwan, China, in 1924, Rev. D. C. Graham, besides a large number of other interesting species, also collected two new batrachians, the diagnosis of which it is desired to place on record without delay.

Megophrys minor, sp. nov.

Diagnosis.—Snout strongly projecting beyond lower jaw; head as broad as long; tympanum distinct; tibio-tarsal articulation reaching between eye and tip of snout; no vomerine teeth; upper eyelid without horn-like tubercle; toes with a slight rudiment of web; diameter of tympanum about two-thirds diameter of eye and greater than distance between eye and tympanum; inner metatarsal tubercle large; male with a large external vocal sac.

Type-locality.—On mountain, about 3000 feet altitude, above Kwanhsien, 55 kilometers northwest of Chengtu, Szechwan, China.

Type.—U. S. National Museum No. 68,816. D. C. Graham, collector, July 5, 1924.

Total length, 32 mm.

Apparently closely related to *Megophrys boettgeri*.

Rana jugans, sp. nov.

Diagnosis.—Tips of fingers and toes dilated into distinct disks bearing a crescentic horizontal groove separating the upper from the lower surface, with a transverse groove on the upper surface; disks of fingers larger than those of the toes, their width about twice that of the narrowest part of the penultimate phalanx; fingers without dermal border; tip of first finger not dilated, only slightly swollen; third finger considerably less than twice length of snout measured on axis of body; foot shorter than tibia; vomerine teeth well developed; tibia-tarsal articulation reaching nostril; tibia $1\frac{3}{4}$ in length from snout to vent; no dorso-lateral fold; tympanum small, scarcely visible; skin smooth above and below without granulations; male

without external vocal sacs; color above reddish brown obscurely clouded with dusky; sides of head and body as well as hind aspect of femur much darker brown (possibly marked with dusky marblings); legs with dark cross-bars.

Type-locality.—Near Wenchwan, about 100 kilometers northwest of Chengtu, Szechwan, China.

Type.—U. S. Nat. Mus., No. 67,819; D. C. Graham, collector, August 13, 1924.

Total length, 53 mm.

Related to *Rana afghana* and *R. himalayana* of the subgenus *Amolops* Cope.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW GENUS AND SPECIES OF GROUND WARBLER
FROM THE PROVINCE OF SZECHWAN, CHINA.

BY J. H. RILEY.¹

Among the fine lot of birds sent to the U. S. National Museum by the Rev. David C. Graham is a small series of skins of a ground warbler from Mount Omei, 3500-4000 feet, related to *Oligura*, but belonging to an apparently undescribed genus. This bird may be described as follows:

Antiornis, gen. nov.

Similar to *Oligura* Hodgson, especially in the wing formula, but tail proportionally longer, reaching to about the tip of the outstretched feet, the outer tail-feather falling short of the tip of the longest one by about the length of the middle-toe and claw, instead of having the tail only slightly rounded and the outstretched feet reaching beyond the tip for more than length of the middle-toe and claw; nostril an oblong slit overhung by an operculum, instead of elliptical oval without an operculum; feathering on the forehead extending forward on each side of the maxilla to about the middle of the narial opening instead of having the nostrils entirely clear of the frontal antiae; feet weaker.

Type, the following:

Antiornis grahami, sp. nov.

Type, male, U. S. National Museum, No. 303,857, Mount Omei, 3,500 feet, Szechwan, China, August 25, 1924. Collected by David C. Graham.

Above saccardo olive, slightly darker on the head and lighter on the cheeks; lores and region round the eye slightly darker than the pileum; a supra-loral spot, olive-lake; lower-parts from the chin to and including the belly, deep colonial buff; under tail-coverts, chamois; flanks with a slight olive wash; upper tail-coverts, dark olive-buff; tail, dark olive, the feathers edged with buffy citrine; wings, dark olive, the feathers edged on the outer web with the color of the back; under wing-coverts, deep

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colonial buff, becoming whitish on the greater series; remiges below, hair brown, margined basally with whitish on the inner webs. Wing, 48; tail, 38; culmen, 11.5; tarsus, 20.5; middle-toe, 10.5 mm.

Remarks.—*Antiornis* shows a certain superficial resemblance to *Neornis* Blyth, but differs as follows: the primaries are broader and the first proportionally longer, the tail proportionally shorter and the feathers narrower, the general plumage softer and more lax.

There has been some discussion by recent authors as to whether *Oligura* Hodgson (type as fixed by Gray, 1847, *Sylvia castaneocoronata* Burton) is generically distinct from *Tesia* Hodgson (type as fixed by Gray, 1840, *Tesia cyaniventer* Hodgson), but an examination of the bill in the two genera clearly shows them to be separable. *Tesia* has a rather broad flat bill, the nostril an oblong slit overhung by an operculum, the feathers of the frontal antiae extending forward beyond the posterior border of the narial opening; while in *Oligura*, the bill is narrower and more slender, the nostril elliptical oval without an operculum and entirely clear of the feathers of the forehead. These differences are shown by Oates (Fauna Brit. India, Birds, vol. 1, 1889, pp. 192–193, figs. 57, 58).

The wing formula in *Antiornis* is nearly the same as in *Oligura*, except the primaries are broader. First primary about three-fourths as long as the second; fifth and sixth sub-equal and longest. The nostril is like *Tesia*, but the bill is more compressed. In the proportionally longer tail, with shorter outer feather, and weaker feet, *Antiornis* is unlike either *Oligura* or *Tesia*, but is very closely allied. It probably inhabits bushes or grass, on or near the ground.

Stuart Baker (Fauna Brit. India, Birds, 2d ed., vol. 1, 1922, p. 462) places *Tesia* (with which he unites *Oligura*), with some doubt, in the family Troglodytidae. It seems to me *Tesia*, *Oligura*, *Pseudozenicus*, and *Antiornis* are really ground-inhabiting warblers, Sylviidae.

It gives me great pleasure to dedicate the above species to the collector as a slight recognition of the important work he has done in Szechwan.

I am indebted to Mr. Outram Bangs of the Museum of Comparative Zoology for the loan of a series of *Neornis flavolivaceus intricatus*.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SPECIES OF *LIOCICHLA* FROM THE MOUNTAINS OF SZECHWAN, CHINA.

BY J. H. RILEY.¹

In a recent shipment of birds received by the U. S. National Museum from Szechwan, the gift of Rev. David C. Graham, there is a small series of a very striking new species of *Liocichla*, a genus hitherto supposed to be monotypic and confined to the mountains of Formosa. The series was taken on Mount Omei, between 6000 and 7000 feet altitude, in August. It may be known as:

Liocichla omeiensis, sp. nov.

Type, adult male, U. S. National Museum, No. 306,163, Si Gi Pin, Mount Omei, Szechwan, China, August 7, 1925. Collected by David C. Graham.

Forehead, superciliaries, sides of neck and chin raw sienna with an orange wash; crown and occiput deep neutral gray, the feathers of the forehead and crown edged with dusky and with a lighter shaft stripe; remaining upper-parts saccardo olive; cheeks and lower-parts deep grayish olive, the center of the breast and belly tinged with colonial buff; under tail-coverts black, each feather rather broadly bordered with lemon chrome and broadly tipped with scarlet; wing-coverts citrine; primaries black edged on the outer web and tipped with light cadmium, beginning with the third outer primary there is a scarlet fringe at the base, increasing inwardly, and the yellow edge is interrupted in the middle by black on the inner feathers; secondaries black, medal bronze on the outer web basally with a scarlet fringe, then a narrow olive-gray border, followed by a rather large scarlet sub-terminal spot, the tips narrowly light cadmium; tertials medal bronze, the two outer with a large scarlet spot, margined basally with black, on the outer web at the tip, the inner web with a yellow border at the tip on the outer feather; bend of the wing light cadmium; tail saccardo olive, becoming orange-citrine on the outer feather, the central feathers barred with black but this barring only showing as shadow bars

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on the outer feather, the first feather with a light cadmium tip, the second and third feather with a sub-terminal light cadmium bar and a scarlet tip, the remaining tail feathers with scarlet tips; tail below aniline yellow. Wing, 75; tail, 85; culmen, 14; tarsus, 29.5; middle-toe, 16 mm.

Female.—Like the male, but largely lacking the raw sienna wash on the forehead, superciliaries, and sides of neck, the scarlet on the wings reduced, and the scarlet tips to the under tail-coverts and tail lacking.

Remarks.—In the six males in the series there is some slight variation. The lores in two are pinard yellow. The black barring on the central tail-feathers in several are more pronounced than in the type and in one the feathers are solidly black sub-terminally. While *Liocichla steerii* differs quite markedly in detail of color from *Liocichla omeiensis*, the pattern is pretty much the same. In structure the two species are almost identical, except in *omeiensis* the feathers of the forehead and crown are more lanceolate, and the scarlet semi-decomposed edging to the wings, under tail-coverts, and tips of the tail feathers are unique. The latter can hardly be used as a generic character, however, as it is largely absent in the female.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW MARGARITES FROM GREENLAND.

BY WILLIAM HEALEY DALL.

Among a small lot of shells collected in Greenland by the National Geographic Society's expedition of 1925, nearly all well known Greenland species, I find two specimens of a *Margarites* which seems to have been missed by previous collectors. Since the Greenland seas have been industriously explored for Mollusks since the time of Fabricius in 1780, and not only the resident Danes but a multitude of Arctic explorers have paid particular attention to the shells, this was most unexpected. Moreover the species which was dredged in thirty fathoms at Etah, is quite emphatically distinct from any now known from the Arctic regions, notwithstanding the fact that the west Greenland Mollusk fauna, apart from that of the British isles, is perhaps the best known in the world. As a specific name I have selected that of the able president of the society.

Margarites grosvenori, n. sp.

Shell turbiniform, thin, translucent pearly white, with four and a half well rounded whorls; suture very distinct, the nucleus minute, smooth; surface sculptured by fine close regular spiral striation; base well rounded; the aperture nearly circular, the margin thin, continued over the body by a well marked layer of enamel, the inner lip nearly covering a narrow umbilical opening; the operculum thin, horny, multispiral, and more or less concave externally. Height of shell, 8.0; of last whorl, 6.5; diameter of shell, 8.0, of the aperture, 4.0 mm., U. S. National Museum Catalogue No. 363551.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW PECTEN FROM COLOMBIA.

BY WILLIAM HEALEY DALL.

The following species was found in wave formed terraces on the northern shore of the U. S. of Colombia with many other shells, many retaining their natural color.

Pecten (Chlamys) linki, n. sp.

Shell thin, reddish, yellowish, or slate color, generally suffused; inequilateral, slightly oblique; the right valve slightly flatter than the other; major sculpture of 14 to 16 narrow rounded ribs with sub-equal shallow interspaces not channelled; minor sculpture of very fine, slightly raised, close-set concentric lamellae, strongest on the ears; anterior ear narrow, with a deep notch, the ctenolium with five denticles; posterior ear wider, both with four or five obsolete radial threads, well separated; interior of the valve with the spaces corresponding to the outer ribs, channelled; hinge line straight, strongly cross-striated; ligamentary pit moderate in size. Left valve with 14 to 18, but usually 16 ribs with wider interspaces; the rounded summits of the ribs with fine radial striation; the concentric minor sculpture as in the right valve; anterior ear smaller than the posterior, with a well-marked rounded sulcus below it; both ears with four or five faint radial threads; interior radially channelled in harmony with the exterior ribbing; where the ears join the disk the crura are prominent. Height of shell 42, width 47, diameter *circa* 12; hinge line 33 mm. U. S. Nat. Mus. Cat. No. 333691.

Collected by Theo. A. Link on the north coast of the U. S. of Colombia, Department of Antioquia, in raised terraces of clay and sand, probably late Pleistocene. Localities: One-half mile west of Rio San Juan; Zapato; and near Cartagena. The species will probably be found living by dredging off the coast. The shells found with this *Pecten* are nearly all recent species. The shell is most nearly allied to the northern *P. concentricus*, which has similar minor sculpture but is much larger and relatively more inflated. Thirty valves were obtained of which only seven were right valves. Nineteen of the valves had 16 ribs, the larger number of the extra or deficient ribs being due to differences in the small lateral riblets.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NEW SHELLS FROM JAPAN AND THE LOOCHOO
ISLANDS.

BY WILLIAM HEALEY DALL.

Among the shells collected by Messrs. Langford and Thaanum during the summer of 1925 in the Loochoo (Riu Kiu) Islands and Japan were several which appear to be new, indicating the extraordinary richness of the mollusk fauna of that region. Descriptions follow.

Dentalium luchuanum, n. sp.

Shell thin, translucent white, polished except for a short distance (about one-fifth the total length) near the posterior end, which is finely closely longitudinally striated; concentric sculpture only of sparse irregular faint incremental lines; both orifices circular, the posterior without sulci or slits; the shell is gently curved; length 39, diameter at orifice 2, perpendicular to the arch of the curve 2.5 mm. U. S. Nat. Mus. Cat. No. 333692.

Dredged in 15 fathoms at Nago, Okinawa, Loochoo Islands, by Langford and Thaanum. Thaanum collection No. 9596.

Mitra satsumae, n. sp.

Shell short, biconic, with about a dozen subangular ribs with wider interspaces; whorls about nine, rapidly enlarging; suture closely appressed, inconspicuous; ground color black, with a whitish band at the posterior margin of the whorl, which, as it crosses the ribs, has a tinge of brown; there is a narrower whitish line just in front of the periphery which when it crosses the ribs gives a nodular effect; there are three or four rude cords around the region of the canal; aperture narrow, with a white subsutural ridge and four white plaits on the pillar; outer lip sharp, with a whitish margin and black within; height, 19; aperture, 10; diameter, 9 mm. U. S. Nat. Mus. Cat. No. 333693.

Collected at Waki, Satsuma, Japan. Thaanum collection No. 9436.

The periostracum is finely axially striated.

Mitra nakama, n. sp.

Shell minute, black, with a paler band at the posterior edge of the last whorl and a half; whorls about six, the nucleus smooth and somewhat irregularly swollen; suture closely appressed; axial sculpture of about 20 narrow low threadlike ribs with subequal interspaces; spiral sculpture of faint obsolescent striae between the ribs and two or three threads on the canal; aperture narrow, outer lip sharp; throat blackish, pillar with three dark plaits; canal hardly differentiated; height, 7; aperture, 3; diameter, 3 mm. U. S. Nat. Mus. Cat. No. 333694.

Collected at Nakama Island, Okinawa, Loochoo Ids. Thaanum collection 9576.

This is doubtless one of the smallest species of the group. The surface is smooth except for the sculpture, but hardly polished.

Genus **PLANAXIS** Lamarck.

Type, *Planaxis sulcata* Lamarck.

Subgenus **Angiola**, nov.

Shell differing from typical *Planaxis* by minute size, thin shell, hispid periostracum, and in details of the radula. Type:

Angiola periscelida, n. sp.

Shell minute, acute, with about seven whorls, microscopically hispid; whorls translucent, glassy, with a strong spiral purple brown line (sometimes duplex) at the periphery, which on the spire appears just behind the suture; another less conspicuous similar line occurs just behind the canal; suture distinct, not deep, the whorls moderately convex; sculpture of fine equal spiral striae over the whole surface except on the base near the canal where there are a few strong threads; there is no axial sculpture; aperture ovate, the outer lip simple, slightly thickened in the adult; a well marked layer of enamel on the body and concavely arcuate pillar; canal short, deeply sulcate; operculum horny, oval, with a very small terminal incurvation; height of shell, 5.5; of last whorl, 3; of aperture, 2.3; diameter, 2.5 mm. U. S. National Museum Cat. No. 333700. Collected at Waki, Satsuma, Japan: Thaanum collection 9444.

This pretty little shell has the form, but not the size or the porcellaneous structure of *Planaxis zonatus*, nor the heavily callous peristome of the latter, with which it has been compared. The operculum is like that of *Planaxis* or *Litiopa*. In measurements *Planaxis zonatus* is 10 mm. high and 6 mm. in diameter, or about four times the size of the present species, with the same number of whorls.

I may note that Rang states that he was not able to find any operculum in *Litiopa*, which statement is copied by Philippi in his Handbuch. On the other hand H. and A. Adams describe it as having "many whorls." The operculum is really like that of *Planaxis* and is correctly figured by Troschel.

The radula approaches nearest to that of *Planaxis nucleus* Sowerby, as figured by Troschel. It is very minute and difficult to untangle. The

cusps of the outer lateral are of a different shape from those of *T. nucleus*, and the inner lateral, as far as could be determined, differs in minor particulars from that of the latter.

***Liotia langfordi*, n. sp.**

Shell white, solid, with four and a half whorls, the nucleus very minute and smooth; upper whorls somewhat flattened and subcarinate behind the periphery; suture coronate by the ends of (on the last whorl about a dozen) prominent rounded ribs with wider interspaces, which on the spire reach to the carina, but on the last whorl only become obsolete on the base; the suture is deeply pitted between the ribs; other axial sculpture is of fine sharp striae which cover closely the whole shell; spiral sculpture of four to six threads on the spire between the carina and the suture, a strong cord at the periphery with pits between it and the carina, and on the base numerous feeble threads; umbilicus narrow, deep, crenulated at the rim with pits behind and between the crenulations; aperture circular, with a heavy expanded margin; operculum horny, brown, multispiral, with minute calcareous beads on the surface; height, 4; max. diameter, 8; diameter of aperture, 4 mm. U. S. Nat. Mus. Cat. No. 333695.

Collected at Waki, Satsuma, Japan, in 20 fathoms. Thaanum collection 9445.

This is nearest to *L. hermanni* Dunker, but the minor sculpture is different.

***Emarginula imaizumi*, n. sp.**

Shell small, whitish, with irregular gray radiations; the apex elevated, incurved,—a quarter of the whole length in front of the posterior margin; sculpture of numerous equal close-set ribs, without intercalaries, crossed by smaller threads which in passing over the ribs swell to prominent semicircular nodules; the interspaces are so narrow that reticulation is hardly visible; the ribs end in sharp denticulations at the margin; the general profile is oval, slightly wider abreast the apex; the slit is narrow, $2\frac{1}{3}$ mm. long in the type; the interior is bluish white, with a ridge over the closed part of the slit; length, 13; height, 4; greatest width, 8.6 mm. U. S. Nat Mus. Cat. No. 333696.

Collected at Imäizumi, Kagoshima Bay, Japan, on oysters, from a depth of 50 fathoms. Thaanum collection 9403.

***Emarginula* (*imaizumi* var.?) *imella*.**

Shell white, the ribs more slender, hardly nodulous except behind the apex, less close set, so that a punctate reticulation is conspicuous; the slit relatively shorter; the margin moderately crenulate; otherwise resembling the preceding form. Length, 12; height, 5; width, 8.3 mm. U. S. Nat. Mus. Cat. No. 333697.

Collected with the last. Thaanum collection 9402.

It is quite probable that this is merely a variety of *E. imaizumi*, but the aspect of the sculpture is so different that it seems desirable to call attention to it.

***Ischnochiton thaanumi*, n. sp.**

Chiton of moderate size, dorsum not prominently elevated, anterior valve with 12, posterior with 8 rather obscure slits, faintly striated; intermediate valves with one slit; gills nearly ambient; girdle with crowded ovate smooth somewhat imbricated scales, alternately suffused in gray and whitish patches; general coloration light gray with small round white maculations; anterior valve semicircular, with numerous radiating minutely beaded threads; posterior valve with a low subcentral mucro, behind which the surface is minutely reticulate, in front sculptured like the anterior valve; intermediate valves slightly mucronate, not keeled, the jugal area not defined; lateral tracts with a posterior rib articulated with light and dark coloration in front of which are four or five smaller threads; pleural areas with minute radial threads inconspicuously decussate; the sinus is shallow and the sutural laminae narrow; length of the (dry) type, 16; width, 12; height about 3.5 mm. U. S. Nat. Mus. Cat. No. 333698.

Collected at Nago, Okinawa Island, Loochoo Islands. Thaanum collection 9594.

The coloration under a lens is extremely elegant.

***Ischnochiton melinus*, n. sp.**

Chiton small, pale greenish-gray with sparse black dots irregularly distributed, the girdle very minutely closely scaled, with alternate grayish and blackish patches, having a velvety aspect; back roundly arched, the valves not mucronate; the whole surface is microscopically decussate, the areas hardly defined; anterior valve small, feebly radially striate; posterior valve with subcentral inconspicuous mucro; anterior valve with 12, posterior with 10, intermediate with 1 slit; the lateral tracts are nearly smooth, without radial sculpture, merging into the similar pleurals; the sinus is inconspicuous; length of (dry) shell approximately 10, breadth 5, height 3 mm. U. S. Nat. Mus. Cat. No. 333699.

Collected in Tokyo Bay, Japan, in 8 fathoms on dead shells; Thaanum collection 9592.

The gills appear to be about two-thirds ambient.

An important character possessed in common by all specimens in the above list that I have seen, but not by the true *penicillatus* specimens that I have examined, is the noticeable lateral line separating the dark upperparts from the light underparts. It is the most distinct in *P. a. helleri*, which is the darkest race of this group.

Specimens examined.—All from Lower California: *P. a. arenarius* (see "Remarks") mainland, south side of Scammon's Lagoon, 8; Santa Rosalia Bay (about 50 miles north of Scammon's Lagoon), 8. *P. a. albulus*, Magdalena Island, 2. *P. a. helleri*, San Quintin and vicinity, 36. *P. a. albes-cens*, San Felipe, 33.

tion of the San Diego Society of Natural History; adult ♂; collected by Laurence M. Huey, March 23, 1926.

Characters.—Pelage semi-silky, of extremely light color; from between the eyes and from the level of the back of the ears to the base of the tail uniform smoke gray (Ridgway's Color Standards and Color Nomenclature 1912), blending along the sides to the white underparts; some specimens in the series have a definite, brighter colored buff line separating the entire darker upperparts from the white underparts; tail scaly, bi-colored, with dark dorsal stripe, and slight terminal brush of longer hairs; ears well rounded and almost hairless.

Skull.—Similar to that of *P. arenarius* (see "Remarks"), but squarer and audital bullae more inflated. Closely resembles *helleri* of the Pacific Coast about San Quintin, Lower California, except that it is larger, has slightly broader nasals and slightly flatter frontals, especially between the lachrymal bones.

Measurements.—*Type*: Total length, 170; tail, 95; hind foot, 22; ear, 5; weight, 15.0 grams. *Skull* (type): Condyllo-basal length, 23.2; width of bullae, 12.2; length of maxillary tooth-row, 3.0; nasals, 8.8; interorbital constriction, 6.0.

Averages and extremes.—10 adults, including type: Length, 165.3 (158–182); tail, 89.9 (83–103); hind foot, 21.6 (20–23); ear, 5 (all); weight, 15.1 (10.9–19.8). *Skull*: Condyllo-basal length, 23.7 (23.3–24.8); width of bullae, 12.3 (11.8–12.7); length of maxillary tooth-row, 3.1 (3.0–3.4); nasals, 9.1 (8.4–9.7); interorbital constriction, 6.1 (6.0–6.5).

Range.—As far as known, the sandy area bordering San Felipe Bay, Lower California, Mexico. However, further work in Lower California, especially the east-central parts, may add considerably to the range given.

Remarks.—For the present study, examples of *Perognathus arenarius* Merriam from the type locality (San Jorge, near Comondú, Lower California) have not been available. However, specimens of *Perognathus* in the collection of the San Diego Society of Natural History from the vicinity of Scammon's Lagoon on the Pacific side of Lower California correspond closely to Merriam's published description of *P. arenarius*,¹ and it is safe to say that they are either the same animals or very nearly related. While they unquestionably possess *penicillatus* characteristics, the San Felipe collections demand that they be separated from *penicillatus*, and in my estimation, *Perognathus helleri*, *P. penicillatus albulus* and *P. penicillatus ammophilus* should also be transferred to the *arenarius* group. The *arenarius* forms from the Lower California mainland would then be as follows:

Perognathus arenarius arenarius Merriam.

Perognathus arenarius ammophilus Osgood.

Perognathus arenarius albulus Nelson and Goldman.

Perognathus arenarius helleri Elliot.

Perognathus arenarius albescens Huey.

¹ Merriam, Proc. Calif. Acad. Sci., ser. 2, vol. 4, p. 461. Sept. 27, 1894. (With out of skull.)

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

THE DESCRIPTION OF A NEW SUBSPECIES OF
PEROGNATHUS FROM LOWER CALIFORNIA WITH
A SHORT DISCUSSION OF THE TAXONOMIC PO-
SITION OF OTHER PENINSULAR MEMBERS OF
THIS GENUS.

BY LAURENCE M. HUEY.

In diagnosing a collection of mammals recently obtained for the San Diego Society of Natural History at San Felipe, Lower California, Mexico, the writer was confronted with the task of identifying specimens of four groups in the genus *Perognathus*, which were all trapped on common ground in the immediate vicinity of the beach line. Three of the forms are assignable to the *bombycinus*, *baileyi* and *penicillatus* groups, and the fourth, with which the present paper deals, seems most nearly related to *Perognathus arenarius*, described by Merriam in 1894 from the south central part of Lower California. Subsequent writers¹ have designated *P. arenarius* Merriam as a subspecies in the *penicillatus* group, naming it *Perognathus penicillatus arenarius*. In view of the fact that in my collecting at San Felipe six examples referable to *Perognathus penicillatus angustirostris* were captured in the same place as the *arenarius* specimens, and since it is well known that two races of the same species can not occupy the same ground, it seems to me that *P. arenarius* can not be given subspecific standing under *penicillatus*. I therefore propose for the San Felipe specimens the name:

***Perognathus arenarius albescens*, subsp. nov.**

LIGHT-COLORED POCKET MOUSE.

Type.—From San Felipe, Lower California, Mexico; No. 5103, Collec-

¹Elliot, Field Columb. Mus., publ. 79, zool. ser., vol. 3, p. 221. June, 1903.

Osgood, Proc. Biol. Soc. Washington, vol. 20, p. 20. Feb. 23, 1907.

Townsend, Bull. Amer. Mus. Nat. Hist., vol. 31, p. 121. June 14, 1912.

Nelson and Goldman, Proc. Biol. Soc. Washington, vol. 36, p. 159. May 1, 1923.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

AN INTRODUCED BEETLE RELATED TO THE
TOMATO WEEVIL.

BY F. H. CHITTENDEN.

The year 1925 witnessed the discovery of a potential pest in a species of weevil collected by Charles E. Smith and Norman Allen, Truck-crop Insect Investigations, Bureau of Entomology, first on May 2 at Ponchatoula and Covington and later, June 24, at Hammond, La. The beetles were collected on table beets, and were not observed in the field after the middle of July. Although the feeding habits of the species were not noted, sufficient material was collected for study. From the close relationship of this species to the tomato weevil, *Listroderes obliquus* Fab., which is known to be injurious, especially in Australia, this newly discovered insect should be watched carefully, since like so many insects of its kind it is liable to prove a pest in the future. It also is a *Listroderes*, a genus not known to occur in North America until 1922, but well represented in South America, where both species are undoubtedly indigenous. The weevil under discussion has been identified by Dr. Guy A. K. Marshall as *L. apicalis* Waterh., described from material taken by Chas. Darwin and others at Montevideo, Uruguay.

Following is the original description:

Listroderes apicalis Waterh. (Fig. 1.)

Listroderes apicalis Waterhouse, Proc. Zool. Soc., London, 1841, p. 123; Ann. Nat. Hist. 1842, pp. 119, 120; Howard, Ann. Rept. Dept. Agr., Sept. 20, 1925, pp. 22, 23.

Listr. squamosus, fusco-albescens; antennis piceis; rostro carina longitudinali fusca; capite notis duabus fuscis antice convergentibus; thorace antice quam postice latiore, ad latera fere recto, antice fovea incurvata, linea alba longitudinali; elytris thorace duplo latioribus, punctato-striatis;

singulis nota nigrescente obliqua, ad apicem albescente, tuberculo distincto subapicali.

Long. corp. et rostri, $3\frac{1}{4}$; lat. $1\frac{1}{3}$ lin.

Hab. Monte Video.

This species is considerably less than the *L. costirostris*, being about equal in size to the *Phytonomus rumicis*. The rostrum is rather slender, nearly twice as long as the head, covered with minute decumbent hairs, which are of a whitish brown color; in the middle is a longitudinal carina. The thorax is broader than long; the broadest part is considerably in front of the middle; in front it becomes somewhat suddenly contracted; the sides of the thorax converge from near the anterior part towards the base, and are nearly parallel; the posterior margin is slightly rounded, being produced in the middle; the hinder angles are obtuse; the upper surface of the thorax is nearly plane, presenting scarcely any convexity, and in the forepart is a curved impression, the extremities of which lead up to the anterior angles; it is densely clothed with scales, and these are of a very pale brownish color; in parts the scales are of a deep brown color, and in the middle is a longitudinal line, formed of whitish scales; besides the scales are some very minute, semi-erect, scattered dusky hairs; the sculpturing can not well be seen, owing to the covering of scales, but the thorax appears to be very thickly though not coarsely punctured. The elytra are oblong, about one-third broader than the thorax; the humeral angles are prominent and rounded; the sides nearly straight, and the apex rounded; the surface is convex, but somewhat depressed at the basal portion of the elytra; punctate-striated; covered with pale brownish scales, having moreover some very minute scattered spines; the third and fifth interstices of the striae on each elytron are slightly raised; rather behind the middle is an oblique deep brown patch, behind which the scales are white, or nearly so; a distinct angular tubercle is observable on each elytron, at a short distance from the apex. The legs and antennae are brown, and covered with minute palish hairs; near the apex of each of the femora is a whitish ring. (G. R. Waterhouse, 1841.)

The nearest native genus to *Listroderes* is *Listronotus* Jekel, containing 28 described species, many of subaquatic habits, in our fauna. These two genera are very closely related, hence have in common many generic characters. The former is said to differ chiefly by the possession of the "posterior evanescent scrobes." The two species *apicalis* and *obliquus* differ further from our native *Listronotus* in being more distinctly depressed and more oblong in form. The prothorax is much widened in front of the middle and is strongly and widely depressed beyond that point and behind the apex.

The main differences between the species under discussion and *obliquus* are expressed in the following tabular statement:

<i>apicalis.</i>	<i>obliquus.</i>
Dorsal scaly covering pale ochereous gray.	Dorsal scales larger, yellow-brown to darker brown.
Pronotum strongly tubulate, produced at sides and nearly concealing the eyes; sulcate at middle.	Pronotum not so strongly tubulate; not sulcate at middle.
Elytra each with a dark irregular transverse fascia about $\frac{1}{3}$ from apex.	Elytra with a short pale fascia each converging toward suture.



FIG. 1.—*Listrionotus apicalis*: beetle, greatly enlarged.



FIG. 2.—*Listrionotus obliquus*: greatly enlarged.

Alternate intervals elevated with a prominent acute, tooth-like process each side.	All intervals slightly elevated with a smaller tooth each side.
Dorsal surface beset with short semi-recumbent setae, regularly placed, longer near apex.	Dorsal surface with longer suberect black setae, somewhat irregularly placed on disc, ochreous gray on sides and at apex.
Length, 5.0 to 6.0 mm.	Length, 7.0 to 8.5 mm.

The male in *apicalis* has the first two segments glabrous at the middle, where they form together a distinct concavity; the fifth segment is also glabrous and concave, the concavity being rounded in outline.

Up to July 15, 1925, Mr. Smith had reported this newly discovered species from the following localities in Louisiana: Ponchatoula and Hammond in Tangipahoa Parish; Covington, St. Tammany Parish; Livingston, Livingston Parish; Greensburg, St. Helena Parish and Baton Rouge in East Baton Rouge Parish.

The male of *obliquus* has not been identified, indeed it has been learned by M. M. High and reported by Dr. L. O. Howard (1925) that there is reason to believe that this species reproduces by parthenogenesis.

The tomato weevil, it might be added, is omnivorous in tendency but it favors vegetable crops, the list being as follows: turnip and carrot, whence the names turnip weevil and carrot weevil, tomato, potato, cucumbers, beans, parsnip and lettuce. Chrysanthemum, tobacco in seed beds and *Crystostemma calendulaceum* or Cape weed, the last a favorite food plant, are also attacked. It has also been introduced into South Africa.

Up to September 20, 1925, this species had become widely established in southern Mississippi, southern Alabama, southeastern Louisiana and in two counties in western Florida, but in March and April Mr. T. D. Urbahns reported outbreaks in Santa Clara and San Jose, California, the insect appearing in abundance on carrots.

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PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

INTERNATIONAL RULES OF ZOOLOGICAL
NOMENCLATURE.¹

RULES AND RECOMMENDATIONS.

GENERAL CONSIDERATIONS.

Article 1.—Zoological nomenclature is independent of botanical nomenclature in the sense that the name of an animal is not to be rejected simply because it is identical with the name of a plant. If, however, an organism is transferred from the vegetable to the animal kingdom its botanical names are to be accepted in zoological nomenclature with their original botanical status; and if an organism is transferred from the animal to the vegetable kingdom its names retain their zoological status.

Recommendation.—It is well to avoid introducing into zoology as generic names such names as are in use in botany.

Article 2.—The scientific designation of animals is uninominal for subgenera and all higher groups, binominal for species, and trinominal for subspecies.

*See Opinions*² Nos. 19, 20, 24, 35, 43, 46, 50, 54.

Article 3.—The scientific names of animals must be words which are either Latin or Latinized, or considered and treated as such in case they are not of classic origin.

¹[The International Code of Zoological Nomenclature has for some time been out of print and therefore difficult to obtain. It has seemed desirable to the Biological Society of Washington to republish this document in order to make it again available to naturalists. In order to make it still more useful, summaries of the Opinions hitherto rendered by the International Commission on Zoological Nomenclature are added. The Biological Society is under great obligation to the Secretary of the International Commission, Dr. Charles Wadell Stiles, for suggestions and other assistance.—*Editor.*]

²The Opinions are published by the Smithsonian Institution, Washington, D. C.
^{*} * * Attention is invited to a correction of Opinion 31, published on page 59, "Publication No. 2060." (See Appendix herewith, p. 91.)

FAMILY AND SUBFAMILY NAMES.

Article 4.—The name of a family is formed by adding ending *idae*, the name of a subfamily by adding *inae*, to the stem of the name of its type genus.

Article 5.—The name of a family or subfamily is to be changed when the name of its type genus is changed.

GENERIC AND SUBGENERIC NAMES.

Article 6.—Generic and subgeneric names are subject to the same rules and recommendations, and from a nomenclatural standpoint they are coordinate, that is, they are of the same value.

See Opinion No. 72.

Article 7.—A generic name becomes a subgeneric name, and the genus so named becomes a subgenus, and *vice versa*.

Article 8.—A generic name must consist of a single word, simple or compound, written with a capital initial letter, employed as a substantive in the nominative singular. Examples: *Canis*, *Perca*, *Ceratodus*, *Hymenolepis*.

Recommendation.—Certain biological groups which have been proposed distinctly as collective groups, not as systematic units, may be treated for convenience as if they were genera, but they require no type species. Examples: *Agamodistomum*, *Amphistomulum*, *Agamofilaria*, *Agamomermis*, *Sparganum*.

See Opinion No. 44.

Recommendations.—The following words may be taken as generic names:

a) Greek substantives, for which the rules of Latin transcription (transliteration (see Appendix F)) should be followed. Examples: *Amphibola*, *Aplysia*, *Pompholyx*, *Physa*, *Cylichna*.

b) Compound Greek words, in which the attributive should precede the principal word. Examples: *Stenogyra*, *Pleurobranchus*, *Tylocystostomum*, *Sarcocystis*, *Pelodytes*, *Hydrophilus*, *Rhizobius*.

This does not, however, exclude words formed on the model of *Hypopotamus*, namely, words in which the attributive follows the principal word. Examples: *Philydrus*, *Biorhiza*.

c) Latin substantives. Examples: *Ancilla*, *Auricula*, *Dolium*, *Hypodolium*, *Oliva*. Adjectives (*Prasina*) and past participles (*Productus*) are also recommended.

d) Compound Latin words. Examples: *Stiliger*, *Dolabrifer*, *Semipalmatus*.

e) Greek or Latin derivatives expressing diminution, comparison, resemblance, or possession. Examples: *Dolium*, *Doliolum*; *Strongylus*, *Eustrongylus*; *Limax*, *Limacella*, *Limacia*, *Limacina*, *Limacites*, *Limacula*; *Limaculus*.

lingulella, Lingulepis, Lingulina, Lingulops, Lingulopsis; Neomenia, Proneomenia; Buteo, Archibuteo; Gordius, Paragordius, Polygordius.

(c) Mythological or heroic names. Examples: *Osiris, Venus, Brisinga, Medea, Crimora*. If not Latin, these should be given a Latin termination (*Aegirus, GONDULIA*).

(d) Proper names used by the ancients. Examples: *Cleopatra, Belindus, Melania*.

(e) Modern patronymics, to which is added an ending to denote dedication:

1. Names terminating with a consonant take the ending *ius, ia, or ium*. Examples: *Selysius, Lamarckia, Kollikeria, Mulleria, Stidia, Krøyeria, Hæzia*.

2. Names terminating with the vowels *e, i, o, u, or y* take the ending *a, or um*. Examples: *Blainvillea, Wyvillea, Carolinia, Fatioa, Bernaya, Oya, Schulzea*.

3. Names terminating with *a* take the ending *ia*. Example: *Danaia*.

4. In generic names formed from patronymics, the particles are omitted but not coalesced with the name, but the articles are retained. Examples: *Blainvillea, Benedenia, Chiajea, Lacepedea, Dumerilia*.

5. With patronymics consisting of two words, only one of these is used in the formation of a generic name. Examples: *Selysius, Targionia, Edwardsia, Duthiersia*.

6. The use of proper names in the formation of compound generic names is objectionable. Examples: *Eugrimmia, Buchiceras, Heromorpha, Möbiuspongia*.

7. Names of ships which should be treated the same as mythological names (*Vega*) or as modern patronymics. Examples: *Blakea, Hirondellea, Challengeria*.

8. Barbarous names, that is, words of nonclassic origin. Examples: *Nikoro, Chilosa*. Such words may receive a Latin termination. Examples: *Yetus, Fossarus*.

9. Words formed by an arbitrary combination of letters. Examples: *Clanculus, Salifa, Torix*.

10. Names formed by anagram. Examples: *Dacelo, Verlusia, Linospa*.

Article 9.—If a genus is divided into subgenera, the name of the typical subgenus must be the same as the name of the genus (see Art. 25).

Article 10.—When it is desired to cite the name of a subgenus, this name is to be placed in parentheses between the generic and the specific names. Examples: *Vanessa (Pyraustis) cardui*.

SPECIFIC AND SUBSPECIFIC NAMES.

Article 11.—Specific and subspecific names are subject to the same rules and recommendations, and from a nomenclature

tural standpoint they are coordinate, that is, they are of same value.

Article 12.—A specific name becomes a subspecific name when the species so named becomes a subspecies, and *versa*.

Article 13.—While specific substantive names derived from names of persons may be written with a capital initial letter, all other specific names are to be written with a small initial letter. Examples: *Rhizostoma Cuvieri* or *Rh. cuvieri*, *Frazerlinus Lucani* or *F. luccani*, *Hypoderma Diana* or *H. di Diana*, *Laophonte Mohammed* or *L. mohammed*, *Æstrus ovis*, *Corax*.

Article 14.—Specific names are:

a) Adjectives, which must agree grammatically with the generic name. Example: *Felis marmorata*.

b) Substantives in the nominative in apposition with the generic name. Example: *Felis leo*.

c) Substantives in the genitive. Examples: *rosae*, *canis*, *antillarum*, *galliae*, *sancti-pauli*, *sanctae-helenae*.

If the name is given as a dedication to one or several persons, the genitive is formed in accordance with the rules of Latin declination in case the name was employed and declined in Latin. Examples: *plinii*, *aristotelis*, *victoris*, *antonii*, *bethae*, *petri* (given name).

If the name is a modern patronymic, the genitive is also formed by adding, to the exact and complete name, an *i* if the person is a man, or an *ae* if the person is a woman, even if the name has a Latin form; it is placed in the plural if the dedication involves several persons of the same name. Examples: *cuvieri*, *möbiusi*, *nuñezi*, *merianae*, *sarasinorum*, *bovis*, *salmoni* (not *salmonis*).

Recommendation.—The best specific name is a Latin adjective, euphonic, and of easy pronunciation. Latinized Greek words or barbarous words may, however, be used. Examples: *gymnocephalus*, *ococcus*, *sicrac*, *aguti*, *hoaculi*, *urubitinga*.

It is well to avoid the introduction of the names *typicus* and *typus* for new names for species or subspecies, since these names are always to result in later confusion.

See Opinions Nos. 8, 50, 64.

Article 15.—The use of compound proper names indic

lication, or of compound words indicating a comparison with a simple object does not form an exception to Art. 2. In these cases the two words composing the specific name are written as one word with or without the hyphen. Examples: *sanctae-Catharinae* or *sanctaecatharinae*, *jan-mayeni* or *jan-mayeni*, *cornu-pastoris* or *cornupastoris*, *cor-anquinum* or *coranquinum*, *cedo-nulli* or *cedonulli*.

Expressions like *rudis planusque* are not admissible as specific names.

See Opinion No. 50.

Article 16.—Geographic names are to be given as substantives in the genitive, or are to be placed in an adjectival form. Examples: *sancti-pauli*, *sanctae-helenae*, *edwardiensis*, *diemenen-magellanicus*, *burdigalensis*, *vindobonensis*.

Recommendation.—Geographic names used by the Romans or by Latin writers of the middle ages are to be adopted in preference to more recent ones. Words like *bordeausiacus* and *viennensis* are poor, but are not to be rejected on this account.

Article 17.—If it is desired to cite the subspecific name, such name is written immediately following the specific name, without the interposition of any mark of punctuation. Example: *Rana esculenta marmorata* Hallowell, but not *Rana esculenta (marmorata)* or *Rana marmorata* Hallowell.

Article 18.—The notation of hybrids may be given in several ways; in all cases the name of the male parent precedes that of the female parent, with or without the sexual signs:

(1) The names of the two parents are united by the sign of multiplication (X). Example: *Capra hircus* ♂ X *Ovis aries* ♀ and *Capra hircus* X *Ovis aries* are equally good formulae.

(2) Hybrids may also be cited in form of a fraction, the male parent forming the numerator and the female parent the denominator. Example: $\frac{\textit{Capra hircus}}{\textit{Ovis aries}}$. This second method is in so far preferable that

it permits the citation of the person who first published the hybrid form. Example: $\frac{\textit{Bernicla canadensis}}{\textit{Anser cygnoides}}$ Rabé.

(3) The fractional form is also preferable in case one of the parents is itself a hybrid.

Example: $\frac{\textit{Tetrao tetrix} \times \textit{Tetrao urogallus}}{\textit{Gallus gallus}}$.

In the latter case, however, the parentheses may be used. Example: (*Tetrao tetriz* × *Tetrao urogallus*) × *Gallus gallus*.

d) When the parents of the hybrid are not known as such [parentheses], the hybrid takes provisionally a specific name, the same as if it were a true species, namely, as if it were not a hybrid; but the generic name is preceded by the sign of multiplication. Example: × *Coregonus dolomieu* Fatio.

FORMATION, DERIVATION, AND ORTHOGRAPHY OF ZOOLOGICAL NAMES.

Article 19.—The original orthography of a name is to be preserved unless an error of transcription, a *lapsus calami*, or a typographical error is evident.

See Opinions Nos. 8, 26, 27, 29, 34, 36, 41, 60, 61, 63, 70.

Recommendation.—For scientific names it is advisable to use some other type than that used for the text. Example: *Rana esculenta* [italic] Linné, 1758, lives in Europe.

Article 20.—In forming names derived from languages in which the Latin alphabet is used, the exact original spelling, including diacritic marks, is to be retained. Examples: *Lysius*, *Lamarckia*, *Köllikeria*, *Mülleria*, *Siddia*, *Krøyeria*, *Liñezia*, *möbiusi*, *medici*, *czjžeki*, *spitzbergensis*, *islandicus*, *patagonensis*, *patagonicus*, *barbadensis*, *färöensis*.

Recommendations.—The prefixes *sub* and *pseudo* should be used only with adjectives and substantives, *sub* with Latin words, *pseudo* with Greek words, and they should not be used in combination with proper names. Examples: *subviridis*, *subchelatus*, *Pseudacanthus*, *Pseudopoda*, *Pseudomys*. Words like *sub-wilsoni* and *pseudo-grateloupiana* are not recommended.

The terminations *oides* and *ides* should be used in combination only with Greek or Latin substantives; they should not be used in combination with proper names.

Geographic and patronymic names from countries which have no recognized orthography or which do not use the Latin alphabet should be transcribed into Latin according to the rules adopted by the Geographical Society of Paris. (See Appendix G.)

In proposing new names based upon personal names, which are written sometimes with *ä*, *ö* or *ü*, at other times with *ae*, *oe* and *ue*, it is recommended that authors adopt *ae*, *oe* and *ue*. Example: *muelleri* in preference to *mulleri*.

AUTHOR'S NAME.

Article 21.—The author of a scientific name is that person who first publishes the name in connection with an indication

definition, or a description, unless it is clear from the contents of the publication that some other person is responsible for said name and its indication, definition, or description.

Article 22.—If it is desired to cite the author's name, this should follow the scientific name without interposition of any mark of punctuation; if other citations are desirable (date, *p. n.*, *emend.*, *sensu stricto*, etc.) these follow the author's name, but are separated from it by a comma or by parenthesis. Examples: *Primates* Linné, 1758, or *Primates* Linné (1758).

Recommendation.—When the name of the author of a scientific name is abbreviated, the writer will do well to conform to the list of abbreviations published by the Zoological Museum of Berlin.¹

Article 23.—When a species is transferred to another than the original genus or the specific name is combined with any other generic name than that with which it was originally published, the name of the author of the specific name is retained in the notation but placed in parentheses. Examples: *Caenia lata* Linné, 1758, and *Dibothriocephalus latus* (Linné, 1758); *Fasciola hepatica* Linné, 1758, and *Distoma hepaticum* (Linné, 1758).

If it is desired to cite the author of the new combination, his name follows the parentheses. Example: *Limnatis nilotica* (Lacigny, 1820) Moquin-Tandon, 1826.

Article 24.—When a species is divided, the restricted species to which the original specific name of the primitive species is distributed may receive a notation indicating both the name of the original author and the name of the reviser. Example: *Caenia solium* Linné, partim, Goeze.

THE LAW OF PRIORITY.

Article 25.—The valid name of a genus or species can be only that name under which it was first designated on the condition:

- a) That this name was published and accompanied by an indication, or a definition, or a description; and
- b) That the author has applied the principles of binary nomenclature.

¹Liste der Autoren zoologischer Art- und Gattungsnamen zusammengestellt von den Zoologen des Museum für Naturkunde in Berlin. Berlin, 2. vermehrte Auflage, 8°, 1906.

See Opinions Nos. 1, 2, 4, 5, 9, 10, 12, 13, 15-17, 19-21, 24, 28, 37-46, 49-54, 56-59, 65-67, 73-78, 84, 85, 87, 88, 90.

APPLICATION OF THE LAW OF PRIORITY.

Article 26.—The tenth edition of Linné's *Systema Naturæ* 1758, is the work which inaugurated the consistent general application of the binary nomenclature in zoology. The date 1758, therefore, is accepted as the starting point of zoological nomenclature and of the Law of Priority.

See Opinions Nos. 3, 12, 13, 15, 16, 51, 52.

Article 27.—The Law of Priority obtains and consequently the oldest available name is retained:

- a) When any part of an animal is named before the animal itself;
- b) When any stage in the life history is named before the adult;
- c) When the two sexes of an animal have been considered as distinct species or even as belonging to distinct genera;
- d) When an animal represents a regular succession of similar generations which have been considered as belonging to different species or even to different genera.

See Opinions Nos. 44, 88.

Article 28.—A genus formed by the union of two or more genera or subgenera takes the oldest valid generic or subgeneric name of its components. If the names are of the same date that selected by the first reviser shall stand.

The same rule obtains when two or more species or subspecies are united to form a single species or subspecies.

Recommendation.—In absence of any previous revision, the establishment of precedence by the following method is recommended:

- a) A generic name accompanied by specification of a type has precedence over a name without such specification. If all or none of the genera have types specified, that generic name takes precedence the diagnosis of which is most pertinent.
- b) A specific name accompanied by both description and figure stands in preference to one accompanied only by a diagnosis or only by a figure.
- c) Other things being equal, that name is to be preferred which stands first in the publication (page precedence).

See Opinion No. 40.

Article 29.—If a genus is divided into two or more restricted

genera, its valid name must be retained for one of the restricted genera. If a type was originally established for said genus, the generic name is retained for the restricted genus containing said type.

Recommendation.—To facilitate reference, it is recommended that when an older species is taken as type of a new genus, its name should be actually combined with the new generic name in addition to citing it with the old generic name. Example: *Gilbertella* Eigenmann, 1903, *Smithsonian Misc. Coll.*, v. 45, p. 147, type *Gilbertella alata* (Steindachner) = *Anacyrtus alatus* Steindachner.

See Opinion No. 10.

Article 30.—The designation of type species of genera shall be governed by the following rules (a–g), applied in the following order of precedence:

See Opinions Nos. 11, 14, 18, 23, 31–33, 42, 43, 45, 62, 68, 69, 71, 79, 81, 86.

I. Cases in which the generic type is accepted *solely* upon the basis of the original publication:

a) When in the original publication of a genus, one of the species is definitely designated as type, this species shall be accepted as type, regardless of any other considerations. (Type by original designation.) (See Opinion No. 7.)

b) If in the original publication of a genus, *typicus* or *typus* is used as a *new* specific name for one of the species, such use shall be construed as “type by original designation.”

c) A genus proposed with a single original species takes that species as its type. (Monotypical genera.) (See Opinions Nos. 6, 9, 22, 30, 42, 47.)

d) If a genus, without originally designated (see a) or indicated (see b) type, contains among its original species one possessing the generic name as its specific or subspecific name, whether as valid name or synonym, that species or subspecies becomes *ipso facto* type of the genus. (Type by absolute autonymy.) (See Opinions Nos. 16, 33, 35.)

II. Cases in which the generic type is accepted not solely upon basis of the original publication:

e) The following species are excluded from consideration in determining the types of genera. (See Opinions Nos. 14, 32, 33, 56.)

a. Species which were not included under the generic name at the time of its original publication.

β. Species which were *species inquirendae* from the standpoint of the author of the generic name at the time of its publication.

γ. Species which the author of the genus doubtfully referred to it.

f) In case a generic name without originally designated type is proposed as a substitute for another generic name, with or without type, the type of either, when established, becomes *ipso facto* type of the other. (See Opinions Nos. 9, 46.)

g) If an author, in publishing a genus with more than one valid species, fails to designate (see a) or to indicate (see b, d) its type, any subsequent author may select the type, and such designation is not subject to change. (Type by subsequent designation.) (See Opinions Nos. 6, 9, 10, 32, 56.)

The meaning of the expression "select the type" is to be rigidly construed. Mention of a species as an illustration or example of a genus does not constitute a selection of a type.

III. *Recommendations.*—In selecting types by subsequent designation authors will do well to govern themselves by the following recommendations:

h) In case of Linnaean genera, select as type the most common or the medicinal species. (Linnaean rule, 1751.)

i) If a genus, without designated type, contains among its original species one possessing as a specific or subspecific name, either as valid name or synonym, a name which is virtually the same as the generic name or of the same origin or same meaning, preference should be shown to that species in designating the type, unless such preference is strongly contraindicated by other factors. (Type by virtual tautonymy.) Examples: *Bos taurus*, *Equus caballus*, *Ovis aries*, *Scomber scombrus*, *Sphaerostoma globiporum*; contraindicated in *Dipetalonema* (compare species *Filaria dipetala*, of which only one sex was described, based upon one specimen and not studied in detail).

j) If the genus contains both exotic and nonexotic species from the standpoint of the original author, the type should be selected from the nonexotic species.

k) If some of the original species have later been classified in other genera, preference should be shown to the species still remaining in the original genus. (Type by elimination).

l) Species based upon sexually mature specimens should take precedence over species based upon larval or immature forms.

m) Show preference to species bearing the name *communis*, *vulgaris*, *medicinalis* or *officinalis*.

- n) Show preference to the best described, best figured, best known, or most easily obtainable species, or to one of which a type specimen can be obtained.
- o) Show preference to a species which belongs to a group containing as large a number of the species as possible. (De Candolle's rule.)
- p) In parasitic genera, select, if possible, a species which occurs in man or some food animal or in some very common and widespread host species.
- q) All other things being equal, show preference to a species which the author of the genus actually studied at or before the time he proposed the genus.
- r) In case of writers who habitually placed a certain leading or typical species first as "chef de file," the others being described by comparative reference to this, this fact should be considered in the choice of the type species.
- s) In case of those authors who have adopted the "first species rule" in fixing generic types, the first species named by them should be taken as types of their genera.
- t) All other things being equal, page precedence should obtain in selecting a type.

Article 31.—The division of a species into two or more restricted species is subject to the same rules as the division of a genus. But a specific name which undoubtedly rests upon an error of identification can not be retained for the misdetermined species even if the species in question are afterwards placed in different genera. Example: *Taenia pectinata* Goeze, 1782 = *Cittotaenia pectinata* (Goeze), but the species erroneously determined by Zeder, 1800, as "*Taenia pectinata* Goeze" = *Andrya rhopalcephala* (Riehm); the latter species does not make the name *Andrya pectinata* (Zeder). (See Opinion No. 13.)

REJECTION OF NAMES.

Article 32.—A generic or a specific name, once published, can not be rejected, even by its author, because of inappropriateness. Examples: Names like *Polyodon*, *Apus*, *albus*, etc., when once published, are not to be rejected because of a claim that they indicate characters contradictory to those possessed by the animals in question.

Article 33.—A name is not to be rejected because of tautonymy, that is, because the specific or the specific and sub-specific names are identical with the generic name. Examples: *Trutta trutta*, *Apus apus apus*.

Article 34.—A generic name is to be rejected as a homonym¹ when it has previously been used for some other genus of animals. Example: *Trichina* Owen, 1835, nematode, is rejected as homonym of *Trichina* Meigen, 1830, insect.

See Opinions Nos. 12, 29, 83.

CODE OF ETHICS.

Without presuming to be the arbiter of points of general ethics, the Commission is persuaded that there is one phase of this subject upon which it is competent to speak, and in reference to this point it suggests to the Congress the adoption of the following resolution:

Whereas—experience has shown that authors, not infrequently, inadvertently publish as new designations of genera or species, names that are preoccupied, and

Whereas—experience has also shown that some other authors, discovering the homonymy, have published new names for the later homonyms in question, *be it therefore*

RESOLVED—That when it is noticed by any zoologist that the generic or specific name published by any living author as new is in reality a homonym, and therefore unavailable under Articles 34 and 36 of the Rules on Nomenclature, the proper action, from a standpoint of professional etiquette, is for said person to notify said author of the facts of the case, and to give said author ample opportunity to propose a substitute name.

Article 35.—A specific name is to be rejected as a homonym¹ when it has previously been used for some other species or subspecies of the same genus. Example: *Taenia ovilla* Rivolta, 1878 (n. sp.), is rejected as homonym of *T. ovilla* Gmelin, 1790.

¹Beside the special journals and special nomenclators of various groups, authors will find the following publications very valuable in determining whether any given subgeneric, generic or supergeneric name is preoccupied, and if authors will consult these works before publishing new names, considerable confusion and later change of names will be avoided:

C. D. SHERBORN. Index animalium sive index nominum quae ab A. D. 1758, generibus et speciebus animalium imposita sunt. Societatibus eruditorum adjuvantibus a Carlo Davis Sherborn confectus. Sectio I a kalendis januariis, 1758, usque ad finem decembris, 1800. Cantabrigiae, 1902, 8°.

Continuation for 1801–1850 now being issued in parts.

S. H. SCUDDER. Nomenclator zoologicus. An alphabetical list of all generic names that have been employed by naturalists for recent and fossil animals from the earliest times to the close of the year 1879. In 2 parts; I. Supplemental list. II. Universal index. Washington, 1882, 8°.

C. O. WATERHOUSE. Index zoologicus. An alphabetical list of names of genera and subgenera proposed for use in zoology as recorded in the Zoological Record, 1880–1900, and 1901–1910, together with other names not included in the Nomenclator zoologicus of S. H. Scudder. Compiled * * * by Charles Owen Waterhouse, and edited by David Sharp. London, 1902 and 1912, 8°.

The Zoological Record, XXXVIII (et seq.). Being records of zoological literature relating chiefly to the year 1901 (et seq.). London, 1902 (et seq.), 8°. Index to names of new genera and subgenera.

Register zum zoologischen Anzeiger. Herausgegeben von J. V. Carus. Jahrgang 1–10 (1878–1887), 11–15 (1888–1892), 16–20 (1893–1897), 21–25 (1898–1902). Leipzig, 1889, 1893, 1899, 1903, 8°.

Nomenclator animalium generum et subgenerum. Now (1926 et seq.) being issued in parts by the Preussische Akademie der Wissenschaften zu Berlin.

²A homonym is one and the same name for two or more different things. Synonyms are different names for one and the same thing.

When in consequence of the union of two genera, two different animals having the same specific or subspecific name are brought into one genus, the more recent specific or subspecific name is to be rejected as a homonym.

Specific names of the same origin and meaning shall be considered homonyms if they are distinguished from each other only by the following differences:

a) The use of *ae*, *oe*, and *e*, as *caeruleus*, *coeruleus*, *ceruleus*; *ei*, *i* and *y*, as *chiropus*, *cheiropus*; *c* and *k* as *microdon*, *mikrodon*.

b) The aspiration or non-aspiration of a consonant, as *oxyruncus*, *oxyrhynchus*.

c) The presence or absence of a *c* before *t*, as *autumnalis*, *auctumnalis*.

d) By a single or double consonant; *litoralis*, *littoralis*.

e) By the endings *ensis* and *iensis* to a geographical name, as *timorensis*, *timoriensis*.

Article 36.—Rejected homonyms can never be used again. Rejected synonyms can be used again in case of the restoration of erroneously suppressed groups. Example: *Taenia giardi* Moniez, 1879, was suppressed as a synonym of *Taenia ovilla* Rivolta, 1878; later it was discovered that *Taenia ovilla* was preoccupied (*Taenia ovilla* Gmelin, 1790). *Taenia ovilla*, 1878, is suppressed as a homonym, and can never be used again; it was stillborn and can not be brought to life, even when the species is placed in another genus (*Thysanosoma*). *Taenia giardi*, 1879, which was suppressed as a synonym, becomes valid upon the suppression of the homonym *Taenia ovilla* Rivolta.

Recommendations.—It is well to avoid the introduction of new generic names which differ from generic names already in use only in termination or in a slight variation in spelling which might lead to confusion. But when once introduced, such names are not to be rejected on this account. Examples: *Picus*, *Pica*; *Polyodus*, *Polyodon*, *Polyodonta*, *Polyodontas*, *Polyodontus*; *Macrodon*, *Microdon*.

The same recommendation applies to new specific names in any given genus. Examples: *necator*, *necatrix*; *furcigera*, *furcifera*; *rhopalcephala*, *rhopaliocephala*.

If from the radical of a geographic name two or more adjectives are derived, it is not advisable to use more than one of them as specific name in the same genus, but if once introduced they are not to be rejected on

this account. Examples: *hispanus*, *hispanicus*; *moluccensis*, *moluccanus*; *sinensis*, *sinicus*, *chinensis*; *ceylonicus*, *zeylanicus*.

The same recommendation applies also to other words derived from the same radical and differing from each other only in termination or by simple change in spelling.

SUSPENSION OF RULES IN CERTAIN CASES.

RESOLVED.—That plenary power is herewith conferred upon the International Commission on Zoological Nomenclature, acting for this Congress, to suspend the Règles as applied to any given case, where in its judgment the strict application of the Règles will clearly result in greater confusion than uniformity, *provided*, however, that not less than one year's notice shall be given in any two or more of the following publications, namely, Bulletin de la Société zoologique de France, Monitor Zoologico, Nature, Science (N. Y.), and Zoologischer Anzeiger, that the question of a possible suspension of the Règles as applied to such case is under consideration, thereby making it possible for zoologists, particularly specialists in the group in question, to present arguments for or against the suspension under consideration; and *provided*, also, that the vote in Commission is unanimously in favor of suspension; and *provided* further, that if the vote in Commission is a two-thirds majority of the full Commission, but not a unanimous vote in favor of suspension, the Commission is hereby instructed to report the facts to the next succeeding International Congress; and

RESOLVED.—That in the event that a case reaches the Congress, as hereinbefore described, with a two-thirds majority of the Commission in favor of suspension, but without unanimous report, it shall be the duty of the President of the Section on Nomenclature to select a special board of 3 members, consisting of one member of the Commission who voted on each side of the question and one ex-member of the Commission who has not expressed any public opinion on the case, and this special board shall review the evidence presented to it, and its report either majority or unanimous, shall be final and without appeal so far as the Congress is concerned; and

RESOLVED.—That the foregoing authority refers in the first instance and especially to cases of the names of larval stages and the transference of names from one genus or species to another; and

RESOLVED.—That the Congress fully approves the plan that has been inaugurated by the Commission of conferring with special committees from the special group involved in any given case, and that it authorizes and instructs the Commission to continue and extend this policy.

See Opinions Nos. 76, 80, 82, 89, 90.

APPENDIX.

A.—It is very desirable that the proposition of every new systematic group should be accompanied by a diagnosis, both individual and differential, of said group in English, French, German, Italian, or Latin. This diagnosis should state in what museum the type specimen has been deposited and should give the museum [catalogue] number of said specimen.

It is recommended that in published descriptions of a new species or new subspecies, only one specimen be designated and labeled as *type*, the other specimens examined by the author at the same time being *paratypes*.

B.—In publications issued in any other language than English, French, German, Italian, or Latin, it is very desirable that the explanation of figures be translated into one of these tongues.

C.—The metric system of weights and measures and the centigrade thermometer of Celsius are adopted as standard. The *micron* (0.001 mm.), represented by the Greek letter μ , is adopted as the unit of measure in microscopic work.

D.—The indication of enlargement or of reduction, which is very desirable for the comprehension of an illustration, should be expressed in figures rather than by mentioning the system of lenses used.

E.—The indication of enlargement or reduction of an object is usually linear. The sign of multiplication is used for enlargement and the fraction for reduction. Examples: $\times 50$ indicates that the object is enlarged 50 times. $\frac{1}{50}$ indicates that it is reduced to $\frac{1}{50}$ th.

If it is desired to specify that the enlargement is linear, surface, or mass, this may be done as follows: $\times 50^l$ indicates linear enlargement; $\times 50^s$ indicates surface enlargement; $\times 50^m$ indicates mass enlargement.

F.—*Transliteration of Greek words.*—The following table indicates the manner in which Greek words should be transliterated:

e	= e	(ὅαλεος)	Hyalea, not Hyalaea
η	= e	(πειρήνη)	Pirena, not Pirina
final η	= a	(πειρήνη)	Pirena, not Pirene
θ	= th	(τηθύς)	Tethys, not Tetya
ι	= i	(βαλίας)	Balia, not Balca
κ	= c	(ἵπποκρήνη)	Hippocrena, not Hippochrenes
ξ	= x	(ξένος)	Xenus, Xenophora
ρ	= r	(πτερόν)	Pterum
υ	= y	(ὕβος)	Hybolithus, not Hibolites

αι	=	ae	(λιμναῖος)	Limnaea, not Limnea
αυ	=	au	(γλαυκός)	Glaucus
ει	=	i	(χείλος)	Chilostomum, not Cheilostoma
ευ	=	eu	(εὖρος)	Eurus
φ, ει	=	oe	(οἰκία)	Dioeca, Dendroeca, not Dioica, Dendroica
final ου	=	um	(ἐφίππιον)	Ephippium, not Ephippion
final οι	=	us	(εὐομφαλός)	Euomphalus, not Euomphalos
ου	=	u	(λουτήριον)	Luterium, not Lotorium
γγ	=	ng	(ἀγγαρεία)	Angaria
γχ	=	nch	(ἀγκιστομον)	Anchistomum, not Angistoma
γκ	=	nc	(ἀγκιστρον)	Ancistrodon, not Agkistrodon
ρ	=	rh	(ῥέα)	Rhea
ε	=	he	(έρμαλα)	Hermæa, not Ermaea

G.—*Transcription of Geographic and Proper Names.*—The geographic names of nations which employ the Latin characters are to be written with the orthography of the country in which they originate.

The following paragraphs apply only to the geographic names of countries which have no true alphabet or which use letters that are different from the Latin alphabet.

Names of places, however, which have been established by long usage preserve their usual orthography. Examples: *Algiers, Moscow.*

1. The vowels *a, e, i, and o* are pronounced as in French, Italian, Spanish, or German. The letter *e* is never mute.

2. The French sound *u* is represented by *ü* with dieresis, as in German.

3. The French sound *ou* is represented by *u*, as in Italian, Spanish, German, etc.

4. The French sound *eu* is represented by *oe*, pronounced as in the French word *œil*.

5. The long sound of a vowel is indicated by a circumflex accent; the interrupted sound is indicated by an apostrophe.

6. The consonants *b, d, f, j, k, l, m, n, p, q, r, t, v, and z* are pronounced as in French.

7. The letters *g* and *s* always have the hard sound, as in the French words *gamelle* and *siróp*.

8. The sound represented in French by *ch* is designated by *sh*. Examples: *Shérif, Kashgar.*

9. *Kh* represents the harsh guttural; *gh* represents the soft guttural of the Arabs.

10. *Th* represents the sound which terminates the English word *path* (*θ* in Greek). *Dh* represents the sound which commences the English word *those* (*θ* in Greek).

11. Aside from such employment (9, 10) of the letter *h* modifying the letter which precedes it, *h* is always aspirated; the apostrophe is therefore never used before a word commencing with *h*.

12. The semivowel represented by *y* is pronounced as in *yole*.

13. The semivowel *w* is pronounced as in the English word *William*.

14. The double sounds *dj, tch, ts, etc.*, are indicated by letters representing the sounds which compose them. Example: *Matshim*.

15. The $\text{\AA}$ is pronounced *gn*, as in *seigneur*.
16. The letters *x*, *c*, and *q* are not used, since they are duplicates of other letters representing the same sounds; but *q* may serve to indicate the Arabic *qaf* and the soft aspirate may be used to represent the Arabic *ain*.
An attempt should be made to indicate as exactly as possible, by means of the letters given above, the local pronunciation without trying to give complete representation of all the sounds which are heard.

SUMMARIES OF OPINIONS RENDERED.

1. *The Meaning of the Word "Indication" in Art. 25a.*—The word "indication" in Art. 25a is to be construed as follows:

A. With regard to *specific* names, an "indication" is (1) a bibliographic reference, or (2) a published figure (illustration), or (3) a definite citation of an earlier name for which a new name is proposed.

B. With regard to *generic* names (1) a bibliographic reference, or (2) a definite citation of an earlier name for which a new name is proposed, or (3) the citation or designation of a type species.

In no case is the word "indication" to be construed as including museum labels, museum specimens, or vernacular names.

2. *The Nature of a Systematic Name.*—The Commission is unanimously of the opinion that a *name*, in the sense of the Code, refers to the designation by which the actual objects are known. In other words, we name the objects themselves, not our conception of said objects. Names based upon hypothetical forms have, therefore, no status in nomenclature and are not in any way entitled to consideration under the Law of Priority.

Examples: *Pithecanthropus* Haeckel, 1866, being the name of a hypothetical genus, has no status under the Code, and does not therefore invalidate *Pithecanthropus* Dubois, 1894; *Gigantopora minuta* Looss, 1907, g., n. sp., has no status under the Code, since it is admittedly the name of a fantastic unit, not based upon any actual objects.

3. *The Status of Publications Dated 1758.*—The tenth edition of Linné's *Systema Naturæ* was issued very early in the year 1758. For practical reasons, this date may be assumed to be January 1st, 1758, and any other zoological publications bearing the date 1758 may be construed as having appeared subsequent to January 1st. In so far as the date is concerned, such publications may, therefore, be construed as entitled to consideration under the Law of Priority.

4. *Status of Certain Names Published as Manuscript Names.*—Manuscript names acquire standing in nomenclature when printed in connection with the provisions of Art. 25, and the question as to their validity is not influenced by the fact whether such names are accepted or rejected by the author responsible for their publication.

5. *Status of Certain Pre-Linnaean Names Reprinted Subsequent to 1757.*—A pre-Linnaean name, ineligible because of its publication prior to 1758, does not become eligible simply by being cited or reprinted with its original

diagnosis after 1757. To become eligible under the Code, such name must be reinforced by adoption or acceptance by the author publishing the reprint. Examples: The citation, subsequent to 1757, of a bibliographic reference to a paper published prior to 1758 does not establish technical names which may appear in said reference; synonymic citation of pre-Linnaean names, as in the tenth edition of Linné's "Systema Naturae," does not establish such names under the Code.

6. *In Case of a Genus A Linnaeus, 1758, with two species Ab and Ac.*—When a later author divides the genus A, species Ab and Ac, leaving genus A, only species Ab, and genus C, monotypic, with species Cc, the second author is to be construed as having fixed the type of the genus A. (See Article 30.)

7. *On the Interpretation of the Expression "n. g., n. sp." Under Article 30 (a).*—The expression "n. g., n. sp.," used in publication of a new genus for which no other species is otherwise designated as genotype, is to be accepted as designation under Article 30 (a).

8. *On the Retention of ii or i in Specific Patronymic Names Under Article 14 (c) and Article 19.*—Specific patronymics originally published as ending in ii (as *schrangkii*, *ebbesbornii*) are, according to Article 19, to be retained in their original form, despite the provision of Article 14 (c), that they should have been formed with only one i.

9. *The Use of the Name of a Composite Genus for a Component Part Requiring a Name.*—The decision as to whether the name of a composite genus, when made up wholly of older genera, is tenable for a component part requiring a name, depends upon a variety of circumstances. There are circumstances under which such a name may be used, others under which it may not be used (Art. 30).

10. *Designation of Genotypes for Genera Published With Identical Limits.*—If two genera with the same limits are formed independently by different authors, without designation of genotypes, any subsequent author may designate the genotypes (Art. 30 g), and if the types designated are not specifically identical, the two generic names may (other things being equal) be used for restricted genera containing the types in question (Art. 25).

11. *The Designation of Genotypes by Latreille, 1810.*—The "Table des genres avec l'indication de l'espèce qui leur sert de type," in Latreille's (1810) "Considérations générales," should be accepted as designation of types of the genera in question (Art. 30).

12. *STEPHANOCEROS FIMBRIATUS (Goldfuss, 1820) vs. STEPHANOCEROS EICHHORNII Ehrenberg, 1832.*—The generic name *Stephanoceros*, 1832, is to be used in preference to *Coronella*, 1820 (pre-occupied, 1768); the specific name *fimbriatus*, 1820, takes precedence over *eichhornii*, 1832, which is admittedly (Ehrenberg, 1832b, 125, and 1838a, 400-401) *fimbriatus*, 1820, renamed. Ehrenberg was right in rejecting *Coronella*, 1820, but in error in rejecting *fimbriatus*, 1820; no reason is apparent for perpetuating his error.

13. *The Specific Name of the Sand Crab*.—Catesby's (1743) pre-Linnaean name *arenarius* is not available under the Code, although "reprinted" in 1771; *quadratus* 1793 is stated to be preoccupied; *albicans* 1802 being the next specific name in the list becomes valid, under the premises submitted.

14. *The Type Species of ETHEOSTOMA Rafinesque, 1819*.—The designation of *E. blennioides* Rafinesque, 1819, as type of *Etheostoma* Rafinesque, 1819, by Agassiz, 1854, is not invalidated by the fact that Agassiz used as basis for his generic diagnosis characters taken from an erroneous specific determination of 1839. Not only does Agassiz distinctly state that "*Eth. blennioides* Raf." is type of "*Etheostoma* Raf.," but even if the question of the erroneous identification of *E. blennioides* by Kirtland be taken into consideration the conclusion must be drawn that this erroneous identification did not exclude the original specimens of *E. blennioides* from being covered by this specific name; on the contrary, the name as used by Kirtland, 1839, still involved the type specimens; removing now the erroneously determined specimens of 1839, which by Article 30e (a) are excluded from consideration in designating the genotype, the original type specimens of 1819 remain and, upon the premises submitted, represent the type of the genus.

15. *CRASPEDACUSTA SOWERBII* Lankester, 1880, n. g., n. sp., vs. *LIMNOCODIUM VICTORIA* Allman, 1880, n. g., n. sp., *A Fresh Water MEDUSA*.—*Craspedacusta sowerbii* Lankester, 1880, June 17, has clear priority over *Limnocoedium victoria* Allman, 1880, June 24. Presentation of a paper before a scientific society does not constitute publication in the sense of the Code. The Commission is without authority to sanction usage in contravention of the provisions of the Code. [Cf. Suspension, p. 88.]

16. *The Status of Prebinomial Specific Names (Published Prior to 1758) under Art. 30d*.—In deciding whether a case of absolute tautonymy is present (under Art. 30d), the citation of a clear prebinomial specific name in synonymy is to be construed as complying with the demands of Art. 30d. Examples: *Equus caballus* (*Equus* cited in synonymy in the sense of "the horse"), *Alca torda* (*Alca* cited in synonymy in the sense of "the Alca").

17. *Shall the Genera of Weber, 1795, be Accepted?*—Weber's *Nomenclator Entomologicus*, 1795, complies with the requirements of Article 25, hence the genera in question are to be accepted, in so far as they individually comply with the conditions of the Code.

18. *The Type of HYDRUS Schneider, 1799*.—On basis of the premises, *Aspius* Schneider, syn. *hydrus* Pallas, is type of *Hydrus* Schneider.—Art. 30d.

19. *PLESIOPS* vs. *PHAROPTYRYX*.—From the evidence, it is not clear that this case is one of nomenclatorial rather than of zoological nature. So far as the evidence goes, the question as to whether Rüppell was in error in accepting *Plesiops* as identical with *Pharopteryx* must be answered

from a systematic point of view. If, from our present-day conception of generic limits, Rüppell was correct, no reason is apparent for not accepting his nomenclatorial decision.

20. *Shall the Genera of Gronow, 1763, be Accepted?*—Gronow, 1763, is binary, though not consistently binominal. Article 25 demands that an author be binary and Article 2 demands that generic names be uninominal. Under these Articles, Gronow's genera are to be accepted as complying with the conditions prescribed by the Code to render a name available under the Code. [Cf. 89.]

21. *Shall the Genera of Klein, 1744, Reprinted by Walbaum, 1792, be Accepted?*—When Walbaum, 1792, reprinted in condensed form (but did not accept) the genera of Klein, 1744, he did not thereby give to Klein's genera any nomenclatorial status, and Klein's genera do not therefore gain availability under the present Code by reason of being quoted by Walbaum.

22. *CERATICHTHYS vs. CLIOLA.*—Whatever Baird's original intention may have been, he and Girard originally published (1853) *Ceraticthys* as a monotypic genus, describing the genotype (*C. vigilax*) and giving no indication that there were any intentions other than to publish a "n. g., n. sp." Under Article 30c, *vigilax* is the type of *Ceraticthys*.

23. *ASPRO vs. CHEILODIPTERUS, or AMBASSIS.*—Under the premises given, *Centropomus macrodon* may be taken as type of *Aspro* 1802 and the generic name suppressed as synonym of *Cheilodipterus*, thus safeguarding *Ambassis*.

24. *ANTENNARIUS Commerson, 1798, and Cuvier, 1817, vs. HISTRIUS Fischer, 1813.*—*Antennarius* Commerson is a uninominal generic name (Art. 2) of an author who used a binary (Art. 25) (though not binominal) nomenclature. It received nomenclatorial status by virtue of its publication by Lacépède, 1798, and should date from that time instead of from Cuvier, 1817. It is therefore not necessary to suppress it in favor of *Histrio*, 1813. [Cf. 89.]

25. *DAMESIELLA Tornquist, 1899, vs. DAMESELLA Walcott, 1905.*—Under Article 36, Recommendations, it is not necessary to reject *Damesella*, 1900 because of the existence of *Damesiella*, 1898 (1899?).

26. *CYPSILURUS vs. CYPSELURUS.*—In view of the number of typographical errors in Swainson, 1838 and 1839, the Commission is of the opinion that *Cypsilurus* is an evident typographical error and should be corrected to *Cypselurus*.

27. *RUPPELIA and RUPELLIA vs. RÜPPELIA.*—Since a typographical error is evident, *Ruppelia* and *Rupellia* should be corrected to *Rüppellia*.

28. *Shall the Nouvelle Classification of Meigen, 1800, Be Given Precedence Over Meigen's Versuch, 1803?*—The generic names contained in Meigen's "Nouvelle Classification," 1800, must take precedence over those in his

"Versuch," 1803, in every case where the former are found valid under the International Code.

29. *PACHYNATHUS* vs. *PACHYGNATHUS*.—On basis of argument in Opinion 26, and in view of the prior name *Pachygnathus*, 1834, Arach., the Commission is of the Opinion that *Pachynathus* Swainson, 1839, should be suppressed.

30. *Swainson's Bird Genera of 1827*.—Swainson's bird genera in the Philosophical Magazine of 1827 are monotypic, and according to Article 30c the species mentioned are types of their respective genera. Therefore, these types must take precedence over the designated types of Swainson which occurred later, in the Zoological Journal of 1827.

31. *COLUMBINA* vs. *CHAEMEPELIA*.—In 1840 Gray designated as type of *Columbina* Spix, *Columba passerina* Linn. As this species is not one of the original species of *Columbina* Spix, Gray's type designation is not valid and *Columbina** remains without a designated type. The valid type of *Chaemepelia* Swainson, is *Columba passerina* Linn., designated by Gray, 1841.

*Footnote by Stejneger. At the time of the writing of Opinion 31, the second edition of Gray's list of the Genera of Birds, published 1841, had not been seen by the writer, nor was the point brought out clearly in the documents submitted, and hence escaped notice, that *Columbina strepitans* Spix was designated by Gray in 1841, p. 75, as the type of *Columbina*. This action of Gray is undoubtedly valid and the type of *Columbina* is therefore *C. strepitans* Spix. In view of this fact brought to the attention of the Commission by Mr. W. E. Clyde Todd, Opinion 31 is hereby changed accordingly, and will be submitted to the members of the Commission for approval.

[Allen, 1911, Science, 336, designated *griseola* Spix as type of *Columbina* Spix, 1825.]

32. *The Type of the Genus SPHEX*.—On basis of the premises submitted, *sabulosa* is the type of *Sphex* Linnaeus, 1758.

33. *The Type of the Genus RUTILUS Rafinesque, 1820*.—*Cyprinus rutilus* is the type of *Rutilus* Rafinesque, 1820. *Rutilus plargyrus* is the type of *Plargyrus* Rafinesque, 1820.

34. *ÆSHNA* vs. *ÆSCHNA*.—Since evidence of the derivation of the word is not contained in the original publication, the original spelling of *Æshna* should be preserved.

35. *Types of Genera of Binary but not Binominal Authors*.—In determining the type of a genus, the selection must be confined to species included under the generic name in question at the time of its original publication, regardless of the fact whether they were named binominally or not. If, however, a generic name is distinctly proposed as a substitute for an earlier generic name, the species of the latter are to be taken into consideration.

36. *Emendation of TRIOXOCERA, DIOXOCERA, and PENTOXOCERA.*—The Commission is of the opinion that the original publication of *Trioxocera*, *Dioxocera*, and *Pentoxocera* makes it evident that an error of transcription (seu transliteration) is present, and that these names should be emended to read *Triozocera*, *Diozocera*, and *Pentozocera*.

37. *Shall the Genera of Brisson's "Ornithologia," 1760, Be Accepted?*—Brisson's (1760) generic names of birds are available under the Code.

38. *On the Status of the Latin Names in Tunstall, 1771.*—The Latin names in Tunstall's *Ornithologia Britannica*, 1771, are available in so far as they are identifiable through the bibliographic, page, and illustration references given, or through the English names quoted from Pennant, 1768, or through the French names quoted from Brisson, 1760.

39. *On the Status of the Latin Names in Cuvier, 1800.*—The Latin names in the systematic tables given in Cuvier, 1800 (*Leçons d'anatomie comparée*), are available in so far as they are identifiable through the bibliographic references given on page xix of the introduction.

40. *SALMO ERIOX vs. S. TRUTTA and S. FARIO; HENIOCHUS ACUMINATUS vs. H. MACROLEPIDOTUS.*—On basis of the premises submitted, it is not necessary to substitute *eriox* in place of *fario* or *trutta*; Cuvier's (1817) selection of *macrolepidotus* has precedence over the selection of *acuminatus* by Jordan and Seale, 1908.

41. *ATHLENNES vs. ABLENNES.*—As the original publication shows an evident *lapsus calami*, the name *Athlenes* should be emended to read *Ablennes*.

42. *The Type of CARAPUS Rafinesque, 1810.*—*Carapus Rafinesque*, 1810, is monotypic, type *Gymnotus acus* Linnaeus.

43. *On the Status of Genera the Type Species of Which are Cited Without Additional Description.*—The characters given for *Teleogmus*, *Isoplatea*, *Alloderma*, and *Aphobetoideus* cover the genera and the type species, and the generic and specific names are published in the sense of the Code.

44. *LEPTOCEPHALUS vs. CONGER.*—*Leptocephalus* Gronovius, 1763, and Gmelin, 1789, type *morrisii*, takes precedence over any later generic name for which the adult stage of this animal has been designated as type. [Cf. 89.]

45. *The Type of SYNGNATHUS Linnaeus, 1758.*—So far as one can judge from the premises submitted, the type of *Syngnathus* Linnaeus, 1758, has never been definitely designated, and there is no objection to designating, as such, the species *acus* Linnaeus to accord with general custom and convenience.

46. *Status of Genera for which no Species was Distinctly Named in the Original Publication.*—In genera published without mention, by name, of any species, no species is available as genotype unless it can be recognized

from the original generic publication; if only one species is involved, the generic description is equivalent to the publication of "*X-us albus*, n. g., n. sp."; if several species are referred to but not mentioned by name, one of these species must be taken as type; if (as in *Aclastus* Foerster, 1868) it is not evident from the original publication of the genus how many or what species are involved, the genus contains all of the species of the world which would come under the generic description as originally published, and the first species published in connection with the genus (as *Aclastus rufipes* Ashmead, 1902) becomes *ipso facto* the type.

47. CARCHARIAS, CARCHARHINUS and CARCHARODON.—*Carcharias Rafinesque*, 1810, is monotypic, type *Carcharias taurus* Rafinesque.

48. *The Status of Certain Generic Names of Birds Published by Brehm in Isis, 1828 and 1830.*—In so far as the names in question are dependent solely upon a vernacular name, the generic names of Brehm, 1828 and 1830, are *nomina nuda*, and are not entitled to citation from the dates in question.

49. SIPHONOPHORA ASCLEPIADIFOLII vs. NECTAROPHORA ASCLEPIADIS.—On basis of the data submitted, *asclepiadifolii* Thomas, 1879, stands in preference to *asclepiadis* Cowen, 1895.

50. APHIS AQUILEGIAE FLAVA vs. APHIS TRIRHODA.—Since the name *Aphis aquilegiae flava* Kittel, 1827, is polynominal and is not available under the Code, *Aphis trirhoda* Walker, 1849, is the correct name for this species.

51. *Shall the Names of Museum Calonnianum, 1797, Be Accepted?*—The Museum Calonnianum, 1797, is not to be accepted as basis for any nomenclatorial work.

52. SEMOTILUS CORPORALIS vs. SEMOTILUS BULLARIS.—On the premises submitted, *corporalis* has priority over *bullaris*. It is not feasible for the Commission to issue an opinion upon the question: What constitutes an adequate description? The citation of the type locality of a species is not sufficient to establish a name under Art. 25a of the Code. If specific characters are given in addition to the type locality, the type locality becomes a part of the description and is to be considered as an important element in determining the identity of species.

53. HALICAMPUS KOILOMATODON vs. HALICAMPUS GRAYI.—The specific name *grayi* Kaup, 1856, takes priority over *koiomatodon* Bleeker, "about 1865."

54. PHOXINUS Rafinesque vs. PHOXINUS Agassiz.—The genera *Dobula*, *Phoxinus*, and *Alburnus* date from Rafinesque, 1820. The claim is made by Jordan & Evermann, 1896, that *Phoxinus* Agassiz, 1835, is identical with *Phoxinus* Rafinesque, 1820, therefore they claim to have recognised *Phoxinus* 1820. This claim is to be considered correct until proved to be incorrect, and *Cyprinus phoxinus* is the type both of *Phoxinus* 1820, and of *Phoxinus* 1835. If it is claimed that *Alburnus* 1820, is identical with *Alburnus* 1840, *Cyprinus alburnus* becomes the type of *Alburnus* 1820.

55. *The Type of the Genus ONDATRA Link.*—On basis of the premisses submitted, *sibethicus* is type of *Ondatra* Link.

56. *The Type of FILARIA Mueller, 1787.*—Mueller (1787, pp. 64 and 65) cites, clearly through error, the same figure (plate 9, fig. 1) of *Redi* as *Ascaris renalis* Gmel. and *Filaria martis* Gmel. Gmelin (1790a, 3032 and 3040) continued this *lapsus*. Rudolphi (1809a, 69) recognized and corrected the error; since his time *Filaria martis* has been consistently distinguished from *Ascaris renalis*, and no ground is now present for not recognizing Rudolphi's correction of Mueller's *lapsus*. Accordingly *F. martis* stands as type of *Filaria*, and *Filaria* is not to be substituted for *Diocoryphum*, *Diocoryphina*, or *Eustrongylus*.

57. *Names Dating from Hasselquist's "Iter Palaestinum," 1757 and its Translation, 1762, are Untenable.*—Hasselquist's "Iter Palaestinum" was published prior to 1758; it was edited as to its nomenclature by Linnaeus. The German translation by Gadebusch, published in 1762, does not give validity to the names published in the original edition in 1757.

58. *ESOX, LUCIUS, and BELONE.*—"Rigidly construed," neither *Rasbora* (1810, Caratteri, p. 59) nor Cuvier (1817, p. 183) designated type of *Esox* Linnaeus, 1758; Jordan and Gilbert, 1882, p. 352, selected *Esox lucius* Linnaeus as type of *Esox*.

59. *Date of AMPHIMERUS.*—The Trematode name *Amphimerus* Barrois does not date from the appearance of the *tirés à part*, but from the date of issue of *Studies from the Zoological Laboratory, The University of Illinois*, No. 103.

60. *SALMO IRIDIA vs. SALMO IRIDEUS.*—*Salmo iridia* is evidently a *lapsus calami* or a typographical error and may be corrected to *Salmo irideus*.

61. *Emendation of CHAEMEPELIA to CHAMAEPELIA.*—The word *Chaemepelia* Swainson, 1827, should be emended to *Chamaepelia*.

62. *Type Species of Other Genera are not Excluded from Consideration in the Selection of the Type of a Genus.*—As Article 30 does not exclude type species of other genera from consideration in the selection of the type of a given genus, the following type species, as designated by Gray, are, on basis of the data presented, the valid types of the following genera: *Fulmarus*, type *Procellaria glacialis*; *Thalasseus*, type *Sterna cantiaea*; *Herodias*, type *Ardea garzetta*; *Catharista*, type *Vultur aura*; *Morphnus*, type *Fulurubitinga*; *Helinaia*, type *Motacilla vermicivora*.

63. *LEUCISCUS HAKUENSIS vs. LEUCISCUS HAKONENSIS.*—*Leuciscus hakuensis* is to be corrected to *Leuciscus hakonensis* on basis either of a *lapsus calami* or a typographic error.

64. *Serial Letters, as a, b, c, etc., are not Acceptable as Specific Names.*—Serial letters, as a, b, c, etc., are not to be considered as proper specific names.

65. *Case of a Genus Based upon Erroneously Determined Species.*—If an author designates a certain species as genotype, it is to be assumed that his determination of the species is correct; if a case presents itself in which it appears that an author has based his genus upon certain definite specimens, other than upon a species, it would be well to submit the case, with full details, to the Commission. At the present moment, it is difficult to lay down a general rule.

66. *Nematode and Gordiacea Names Placed in the Official List of Generic Names.*—The following Nematode and Gordiacea names are hereby placed in the Official List of Generic Names: *Ancylostoma*, *Ascaris*, *Dracunculus*, *Orthostoma*, *Necator*, *Strongyloides*, *Trichostrongylus*, *Gordius*, and *Paragordius*.

67. *One Hundred and Two Bird Names Placed in the Official List of Generic Names.*—The following 102 bird names are hereby placed in the Official List of Generic Names: *Acryllium*, *Æchmophorus*, *Ægithina*, *Agrotheles*, *Æpyornis*, *Aiz*, *Alauda*, *Anas*, *Apaloderma*, *Aptenodytes*, *Pteryx*, *Aramus*, *Ardea*, *Astrapia*, *Asturina*, *Aulacorhynchus*, *Balaeniceps*, *Strachostomus*, *Brotozeris*, *Bubo*, *Burhinus*, *Cairina*, *Campephaga*, *Capito*, *Anthartes*, *Centrocercus*, *Cephalopterus*, *Cereopsis*, *Chauna*, *Chrysolophus*, *Scinnurus*, *Circæus*, *Clamator*, *Coccyzus*, *Coereba*, *Colaptes*, *Colluricincla*, *Sturniz*, *Crotophaga*, *Diomedea*, *Dromas*, *Ectopistes*, *Egretta*, *Elanus*, *Myrlaimus*, *Eurynorhynchus*, *Eurypyga*, *Fulmarus*, *Gallinago*, *Gampsonyx*, *Myra*, *Gypæus*, *Haematopus*, *Haliaeetus*, *Haliastur*, *Heliornis*, *Ibidorhyncha*, *Jynx*, *Lanius*, *Leistes*, *Manucodia*, *Musophaga*, *Neophron*, *Nornis*, *Numida*, *Nyctea*, *Œdicnemus*, *Opisthocomus*, *Oriolus*, *Pachycephala*, *Andion*, *Parotia*, *Parus*, *Pezoporus*, *Phæthron*, *Pharomachrus*, *Phoenixipterus*, *Platalea*, *Platycercus*, *Polyplectron*, *Porzana*, *Psittacus*, *Peophia*, *Peroglossus*, *Ptiloris*, *Rallus*, *Recurvirostra*, *Sericulus*, *Sitta*, *Sphenorhynchus*, *Spindalis*, *Strigops*, *Struthio*, *Sturnella*, *Sturnus*, *Surnia*, *Syrphaptus*, *Macropyphus*, *Thamnophilus*, *Trichoglossus*, *Uratelornis*, *Vireo*.

68. *The Type Species of PLEURONECTES Linnaeus, 1758a.*—Fleming, 1828, 196, does not designate the type of *Pleuronectes*.

69. *The Type Species of SPARUS Linnaeus, 1758.*—Fleming, 1828, 211, does not designate the type of *Sparus*.

70. *The Case of LIBELLULA AMERICANA L., 1758, vs. LIBELLULA AMERICANUS Drury, 1773.*—In view of the fact that *Libellula americanus* Drury, 1773, is an evident *lapsus calami* for *Gryllus americanus*, the *lapsus* is to be corrected, and the specific name in this instance, *americanus* 1773, is not invalidated by *Libellula americana* 1758.

71. *Interpretation of the Expression "Typical Species" in Westwood's (1840) Synopsis.*—The species cited by Westwood, 1840 (*An Introduction to the Modern Classification of Insects*, vol. 2, *Synopsis*, separate pagination, pages 1 to 158), as "typical species" are to be accepted as definite designations of genotypes for the respective genera. The question whether

any given species under consideration represents the valid genotype is not dependent upon two points: *First*, whether the species was available as a genotype and, *second*, whether this designation in 1840 is antedated by some other designation.

72. *Herrera's Zoological Formulae*.—Designations of animals, according to the system proposed by Herrera, in the case submitted for Opinion, formulae, and not names. Accordingly they have no status in Nomenclature, and are therefore not subject to consideration under the Law of Priority. No author is under obligation to cite these designations in a table of synonymy, index, or other list of names.

73. *Five Generic Names in CRINOIDEA, Eighty-Six Generic Names in CRUSTACEA, and Eight Generic Names in ACARINA, Placed in the Official List of Generic Names*.—The following names are hereby placed in the Official List of Generic Names: *CRINOIDEA*: *Antedon*, *Bathycrinus*, *Holopus*, *Micrinus*, *Rhizocrinus*. *CRUSTACEA*: *Acanthocyclus*, *Actaea*, *Actaeomorpha*, *Actumnus*, *Arcania*, *Archias*, *Arenaeus*, *Atergatis*, *Atergatopsis*, *Banarus*, *Bathynectes*, *Bellia*, *Benthochascon*, *Caphyra*, *Carpilius*, *Carpilodes*, *Copoporus*, *Carupa*, *Chlorodopsis*, *Coenophthalmus*, *Corystoides*, *Cryptocnema*, *Cyclodius*, *Cymo*, *Dacryopilumnus*, *Daira*, *Deckenia*, *Domecia*, *Ebanus*, *Epilobocera*, *Epimelus*, *Erimacrus*, *Erimetopus*, *Euphylax*, *Fax*, *Gecarcinucus*, *Hepatella*, *Heterolithadia*, *Heteronucia*, *Heterozius*, *Hyothelphusa*, *Iliacantha*, *Iphicuius*, *Iphis*, *Ixa*, *Leucosilia*, *Lissocarcinus*, *Lithadia*, *Lupocyclus*, *Merocryptus*, *Myrodes*, *Nucia*, *Nursia*, *Nursia*, *Onychomorpha*, *Oreophorus*, *Osachila*, *Paracyclois*, *Parathelphusa*, *Parathranites*, *Parilia*, *Pariphiculus*, *Persephona*, *Phlyxia*, *Pirimela*, *Platymelus*, *Podophthalmus*, *Polybius*, *Portumnus*, *Potamocarcinus*, *Potamonautus*, *Pseudophilyra*, *Pseudothelphusa*, *Randallia*, *Scylla*, *Speloeophorus*, *Spharocarcinus*, *Telmesus*, *Thalamita*, *Thalamitoides*, *Thalamonyx*, *Tlos*, *Trachycarcinus*, *Trichodactylus*, *Trichopeltarion*, *Valdivia*. *ACARINA*: *Amblyomma*, *Argas*, *Dermacentor*, *Haemaphysalis*, *Hyalomma*, *Ixodes*, *Rhipicephalus*.

74. *Apstein's (1915) List of Nomina Conservanda*.—The Commission has no power to adopt *en bloc* Apstein's list of proposed *Nomina Conservanda* but is prepared to consider names separately upon presentation of reasonably complete evidence.

75. *Twenty-seven Generic Names of PROTOZOA, VERMES, PISCES, REPTILIA and MAMMALIA Included in the Official List of Zoological Names*.—The following twenty-seven generic names are herewith placed in the Official List of Zoological Names, with the type species given in the body of the Opinion: *PROTOZOA*: *Volvox*. *VERMES*: *Hirudo*, *Lumbricus*. *PISCES*: *Ammodytes*, *Anarhichas*, *Atherina*, *Fistularia*, *Mugil*, *Myxine*, *Trachinus*, *Uranoscopus*, *Xiphias*. *REPTILIA*: *Draco*. *MAMMALIA*: *Balaen*, *Bos*, *Castor*, *Delphinus*, *Erinaceus*, *Hippopotamus*, *Hystrix*, *Monodon*, *Moschus*, *Ovis*, *Phoca*, *Sus*, *Talpa*, *Ursus*.

Status of PYROSOMA vs. MONOPHORA; CYCLOSALPA vs. HOLOTHURIA; SALPA vs. DAGYSA; DOLIOLUM, APPENDICULARIA and FRITILLARIA.—The Secretary is authorized and instructed to insist that cases presented for consideration shall be accompanied by reasonably complete data to enable fair consideration of the points at issue. *Pyrosoma* 1804 has priority over *Monophora*. *Cyclosalpa* 1827 is not invalidated by *Holothuria* 1758 (type *physalia*), which does, however, invalidate *Physalia* 1801. The present use of *Holothuria* (type *tubulosa*) in echinoderms is not in accord with the Rules, but experts are advised to use *Physalia* 1801 for the Portuguese Man of War, and *Holothuria* 1791 as genus of Sea Cucumber, pending action upon possible suspension of the Rules in these two cases. As presentation of cases of *Salpa*, *Appendicularia*, *Doliolum*, and *Fritillaria* is incomplete and contains errors, these cases are laid upon the table indefinitely, but without prejudice; unless it can be shown that an application of the Rules to these cases will result in greater confusion than uniformity, the Rules should be enforced. [Cf. Opinions 77 and 80.]

Thirty-five Generic Names in PROTOZOA, COELENTERATA, TREMATODA, MOLLUSCA, CIRRIPIEDIA, TUNICATA, and PISCES Placed in the Official List of Generic Names.—The following names are hereby placed in the Official List of Generic names: PROTOZOA: *Arcella*. COELENTERATA: *Hydra*. TREMATODA: *Hemíurus*, *Schistosoma*. CESTODA: *Anoplocephala*, *Monolepis*, *Moniezia*, *Stilesia*, *Thysanosoma*. CIRRIPIEDIA: *Lepas*. TUNICATA: *Pyrosoma*. PISCES: *Acipenser*, *Callionymus*, *Chimaera*, *Coryphaena*, *Cottus*, *Cyclopterus*, *Cyprinus*, *Diodon*, *Gadus*, *Gasterosteus*, *Gobius*, *Lophius*, *Mormyrus*, *Mullus*, *Muraena*, *Osmerus*, *Perca*, *Scomber*, *Scorpaena*, *Silurus*, *Syngnathus*, *Zeus*.

Case of DERMACENTOR ANDERSONI vs. DERMACENTOR VENUSTUS.—On basis of the premises presented, the Commission is of the opinion that *Dermacentor venustus* dates from Marx in Neumann, 1897, type specimen collection Marx No. 122 (U. S. National Museum), from *Ovis aries*, Texas, and that *Dermacentor andersoni* dates from Stiles, 1908, holotype U. S. P. M. H. S. 9467, from Woodman, Montana.

Case of Lamarck's (1801a) Système des Animaux sans Vertèbres.—Originally construed, "Lamarck's (1801a) Système des Animaux sans Vertèbres" is not to be accepted as designation of type species.

Suspension of Rules in the Case of HOLOTHURIA and PHYSALIA.—Echinoderm genus *Holothuria* Linn., 1767, restr. Bruguière, 1791, type *Holothuria tubulosa* 1767 = *H. tubulosa* 1790, and the Siphonophorae genus *Physalia* Linn., 1801, type *P. pelagica* 1801 = *Holothuria physalis* 1758, are hereby placed in the Official List of Generic Names.

The Genotype of CIMEX, ACANTHIA, CLINOCORIS, and KLINOPHILOS.—On basis of the premises before the Commission, the common bedbug of Europe, *Cimex lectularius*, is the genotype for *Cimex* 1758, *Acanthia* 1775, *Clinocoris* 1829, and *Klinophilus* 1899 (*Clinophilus* 1903), and its proper

technical designation under the Rules is *Cimex lectularius*. *Cimex* L. 1758, type *C. lectularius*, is hereby placed in the Official List of Generic Names.

82. *Suspension of Rules for MUSCA Linnaeus, 1758a, type M. DOMESTICA*.—By authority of the power conferred on the Commission by the 9th International Congress of Zoology to suspend the Règles as applied to any case where in its judgment the strict application of the Règles will clear result in greater confusion than uniformity, Article 30 is hereby suspended in the case of *Musca* Linnaeus, 1758, and *Musca domestica* Linnaeus, 1758, is hereby designated as type of *Musca*, without prejudice to other cases.

83. *ACANTHIZA PYRRHOPTYGIA Vigers and Horsfield, 1827, vs. ACANTHIZA PYRRHOPTYGIA Gould, 1848*.—The principle of the Rule of Homonyms is that any properly published identical name of later date is "stillborn and not be brought to life." *Acanthiza pyrrhopygia* Vigers and Horsfield, 1827, invalidates *Acanthiza pyrrhopygia* Gould, 1848.

84. *TREMATODE, CESTODE, and ACANTHOCEPHALA Names Placed in the Official List of Generic Names*.—The following names are hereby placed in the Official List of Generic Names: *TREMATODA*: *Dicrocoelium*, *Fasciola*, *Gastrodiscus*, *Heterophyes*. *CESTODA*: *Davainea*, *Dipylidium*, *Echinococcus*, *Taenia*. *ACANTHOCEPHALA*: *Gigantorhynchus*.

85. *Ninety-eight Generic Names in CRUSTACEA Placed in the Official List of Generic Names*.—The following names are hereby placed in the Official List of Generic Names: *CRUSTACEA*: *Acmaeopleura*, *Asthenognathus*, *Bathypelax*, *Camptandrium*, *Camptoplax*, *Catoptrus*, *Ceratoplax*, *Chasmognathus*, *Chasmocarcinus*, *Clistocoeloma*, *Cyrtograpsus*, *Dissodactylus*, *Dromedaria*, *Epixanthus*, *Euchiropsus*, *Eucrate*, *Eucratodes*, *Eucratops*, *Euryetisus*, *Euryplax*, *Eurytium*, *Fabia*, *Galene*, *Geryon*, *Glyptograpsus*, *Glyptoplax*, *Gomeza*, *Goneplax*, *Halimede*, *Helice*, *Hephthopelta*, *Hexapoda*, *Holometopus*, *Holothuriophilus*, *Homalaspis*, *Lachnopus*, *Leptodermis*, *Liagore*, *Libystes*, *Liomera*, *Lipaesthesius*, *Litocheira*, *Lophopanope*, *Lophopilumnus*, *Lybia*, *Melybia*, *Metasesarma*, *Metopocarcinus*, *Micropopanope*, *Notonyx*, *Oediplax*, *Ommatocarcinus*, *Opisthopus*, *Orphnozanthus*, *Panoplax*, *Paragalene*, *Parapanope*, *Parapleuraphrycoides*, *Parazanthus*, *Percnon*, *Perigrapsus*, *Pilumnoides*, *Pilumnus*, *Pinnazodes*, *Pinnotherella*, *Pinnotheres*, *Planes*, *Platychiropsus*, *Platypilumnus*, *Platyzanthus*, *Polydectes*, *Prionoplax*, *Pseudocarcinus*, *Pseudopinna*, *Pseudorhombila*, *Psophticus*, *Ptychognathus*, *Pyxidognathus*, *Rhithropodops*, *Rhizopa*, *Ruppellioides*, *Sarmatium*, *Scalopidia*, *Scleroplax*, *Speocarcinus*, *Sphaerosius*, *Tetrazanthus*, *Tetrias*, *Thaumastoplax*, *Utica*, *Varia*, *Xanthasia*, *Xanthodius*, *Xenophthalmodes*, *Xenophthalmus*, *Zosimodes*.

86. *CONULINUS von Martens, 1895*.—The generic name *Conulinus* von Martens, 1895, takes as type *Buliminus* (*Conulinus*) *conulus* Rv., and is not necessarily invalidated by *Conulina* Bronn.

. *The Status of Proof Sheets in Nomenclature.*—Printer's proof sheets do not constitute publication and, therefore, have no status under the International Rules of Zoological Nomenclature.

. *OTARION DIFFRACTUM* vs. *CYPHASPIS BURMEISTERI*.—The name of a species is not disqualified merely because the author included in his conception many parts of more than one species. The name of a genus based on such a species is therefore available. *Otarion diffractum* Zenker is valid. *Otarion* is preferred to *Cyphaspis*, and *C. burmeisteri* Barr. is a synonym of *diffractum*.

. *Suspension of the Rules in the Case of Gronow 1763, Commerson, Gesellschaft Schauplatz 1775 to 1781, Catesby 1771, Browne 1789, Valmont de Bomare 1768 to 1775.*—Under suspension of the rules, in any case where such suspension may be considered necessary according to the interpretation now or hereafter adopted by the Commission, the following names or papers are declared eliminated from consideration as respects systematic names as of their respective dates: Gronow 1763, Commerson 1803, Gesellschaft Schauplatz 1775 to 1781, Catesby 1771, Browne 1789, Valmont de Bomare 1768 to 1775.

. *Report on Sixteen Generic Names of Mammals for Which Suspension of the Rules Was Requested.*—None of the sixteen names receives a unanimous vote for suspension; accordingly, the Commission is not empowered to suspend the Rules for these cases. Six names (namely: *Cercopithecus*, *Gazella*, *Capreolus*, *Lagidium*, *Nycterus*, and *Manatus*) receive two-thirds majority vote for suspension, and are, therefore, to be referred for final decision to a special committee of three to be appointed by the President of the Commission on nomenclature of the next international congress. Ten names (namely: *Echidna*, *Anthropopithecus*, *Coelogenys*, *Chiromys*, *Dasypus*, *Peromyscus*, *Galeopithecus*, *Hapals*, *Rhytina*, and *Simia*) fail to receive a two-thirds majority vote for suspension, and therefore the Law of Priority is applied in these cases. [*Simia* is now before the Commission for consideration.]

to 97 in press.

Copies of 'Opinions' 57 to 90 are still on sale by the Smithsonian Institution; the earlier ones are out of print.]

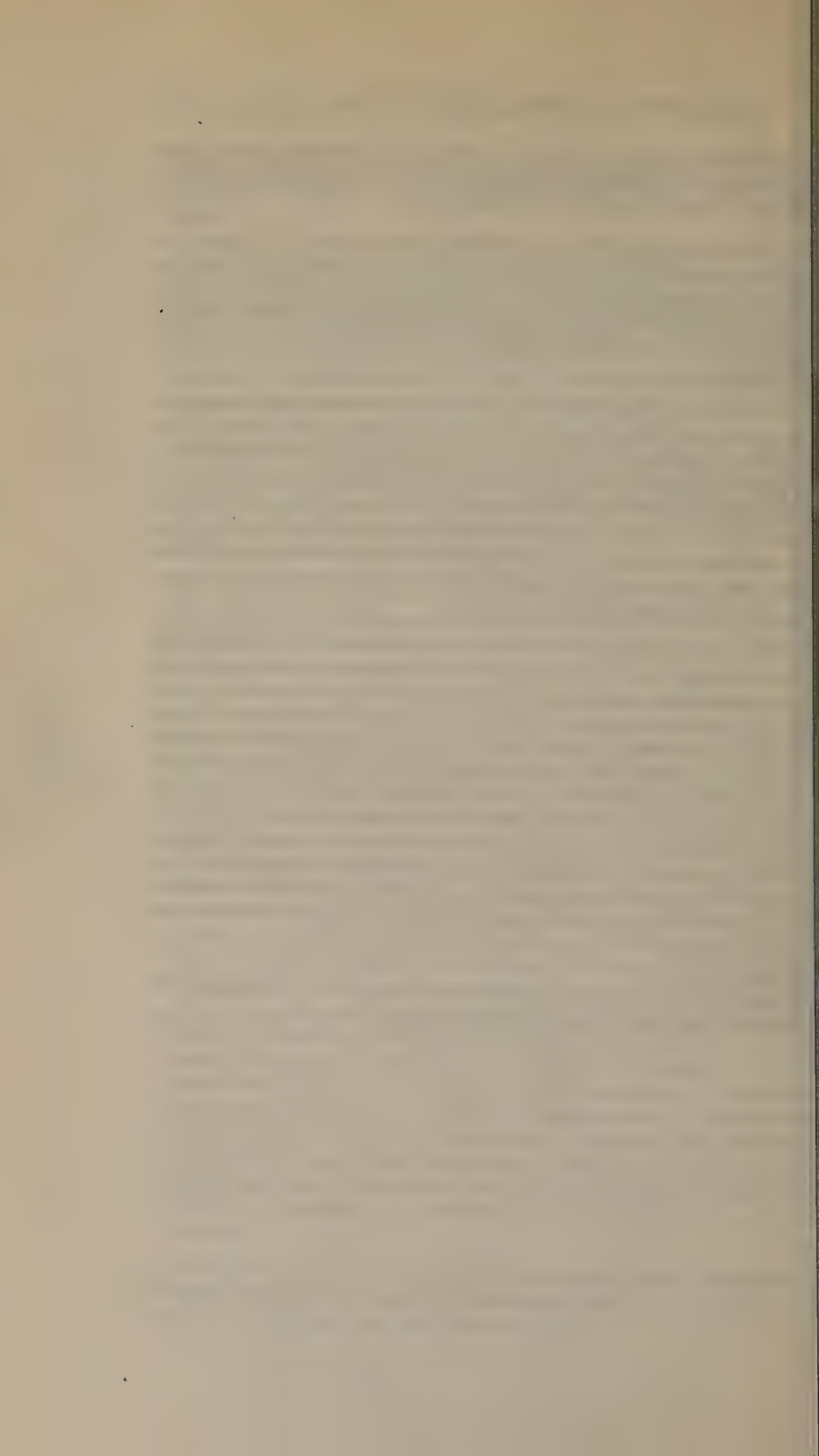




FIG. 2.—*Listroderes obliquus*: beetle, greatly enlarged.



FIG. 1.—*Listroderes apicalis*: beetle, greatly enlarged.

Please substitute this plate for the one issued July 30, 1926, and inserted between pages 72 and 73 of the paper by F. H. Chittenden entitled "An Introduced Beetle related to the Tomato Weevil."

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW BIRDS FROM MEXICO.

BY E. W. NELSON.

In the course of recent field investigations in Mexico specimens were obtained of *Creciscus ruber*, a species of rail still rare in museum collections, from a locality well to the northward of its previously known range. This proves to be subspecifically distinct, and is described below together with a new race of the curassow, *Crax globicera*, specimens of which were collected by E. A. Goldman and the writer long ago on Cozumel Island. It gives me pleasure to name the handsome insular race of this widely ranging curassow in honor of Mr. Ludlow Griscom in appreciation of the fine work he has been doing on the ornithology of Middle America.

***Creciscus ruber tamaulipensis*, subsp. nov.**

MEXICAN RED RAIL.

Type No. 299,086, U. S. National Museum (Biological Survey collection), ♂ ad., Alta Mira, Tamaulipas, Mexico, at sea level, collected by E. A. Goldman, March 8, 1926. Original number 16,260.

Subspecific characters.—In general closely similar to *ruber* and *ruberrimus* but with bill distinctly longer and heavier than in *ruber* and longer and proportionately as heavy as in *ruberrimus*; color appreciably paler and duller or less rufous than in *ruber*, and contrasting even more strongly in this character with *ruberrimus*; chestnut mantle much restricted by forward extension of brown area on back.

Description of type.—Top and sides of head slaty gray, becoming paler on sides much as in the type of *ruberrimus*, and in some specimens of *ruber*; neck, sides of body and crissum dull rusty chestnut, shading into distinctly paler rusty on under parts, becoming palest on throat; wing coverts and entire back from upper tail coverts to rather ill-defined chestnut collar (representing chestnut mantle in typical *ruber*) dull light seal brown; tertiaries above and tail darker, more slaty brown; primaries and secondaries slaty gray.

Measurements of type.—Wing, 75 mm.; tail, 33; culmen, 21; depth of bill at base, 7; tarsus, 33; middle toe, with claw, 40.

Remarks.—The most distinctive character of this new form appears to be the reduction of the broad, chestnut mantle, present in typical *ruber*, to a chestnut collar varying in completeness on the back of the neck in the two known specimens. This collar is indistinct in the type, the brown of the back extending forward in a diffused line to the gray nape, thus cutting the collar; in the topotype the collar is narrow, but complete. The color characters mentioned together with the large stout bill appear from the material available to characterize a fairly well marked geographic race.

Two specimens in the Biological Survey collection from Pacomon, Peten, northern Guatemala, appear somewhat intermediate between typical *ruber* and the present form. The close agreement of *ruber*, *ruberrimus*, and *tamaulipensis* in essential characters, together with the occurrence of what appears to be intergrading specimens clearly indicates that they should stand as not very strongly differentiated but recognizable geographic races as follows:

Creciscus ruber ruber Salvin and Godman.

Creciscus ruber ruberrimus (Miller and Griscom).

Creciscus ruber tamaulipensis Nelson.

Distribution and habits.—The type of *ruber* came from Coban, and there are other records from the highlands of Guatemala; that of *ruberrimus* from Jinotega at an altitude of 3,000 feet in Nicaragua, while *tamaulipensis* is from sea level near Tampico, Tamaulipas. Specimens in the Biological Survey collection from the lowlands of northern Guatemala have already been mentioned, and Salvin and Godman in the *Biologia Centrali-Americana* (Vol. 3, p. 326) list the species from Cozumel Island. The combined records indicate that *Creciscus ruber* is a rather widely ranging species from sea level up to 4,000 feet or more.

Up to the present time nothing appears to have been recorded of the habits of this species. Major Goldman found the new subspecies inhabiting a marsh covering thousands of acres overgrown with cat-tail flags in a great fresh water lagoon near the Tamesi River at Alta Mira in southern Tamaulipas. His attention was first attracted by the notes of one of the birds which may be indicated by the syllables *chick-chick-kah* repeated at intervals, and sometimes followed by a short clear piping whistle of high pitch. The regular notes were very low toned and carried but a few feet. As the notes of several others were heard it was apparent that they are rather common but shy and retiring in habits. They run about over lily pads and other floating water plants under cover of the heavy growth of cat-tails. The two individuals collected did not fully expose themselves, but the slight movement among the leaves of the vegetation as they walked about and a fleeting glimpse of parts of their bodies betrayed them.

***Crax globicera griscomi*, subsp. nov.**

COZUMEL ISLAND CURASSOW.

Type No. 167,377, U. S. National Museum (Biological Survey collection),

♀ ad., Cozumel Island, Yucatan, collected by Nelson and Goldman, April 8, 1901. Original number 8071.

Subspecific characters.—Smaller than *Crax globicera* of Yucatan and other parts of Mexico, with waxy yellow knob (cere) on base of culmen much smaller; females with a broader median white band on the crest feathers, and broader white bars on the inner primaries and the secondaries, and the wing surfaces more irregularly broken with dusky spots and mottling.

Description of type.—Crest tipped with black, the longer feathers with a pure white median zone extending for more than half their length, becoming black at base; orbital area dusky, nearly naked; throat and anterior part of neck all around thinly covered with short feathers, black at tips, becoming white subterminally, and black at base; base of neck above and below, and interscapular region glossy brownish, with a chestnut suffusion; sides of body, scapulars, back and upper tail coverts chestnut, darkest along median line; under parts in general, including under tail coverts, ochraceous buffy, palest on lower part of abdomen; wing feathers in general chestnut, irregularly barred and mottled with buffy whitish and black, the whitish markings broadest on the inner primaries and the secondaries; median tail feathers dark chestnut brownish, with irregular black and narrow white markings, producing a mottled, or streaked effect; outer tail feathers plain brownish; bill (dried specimen) dark at base, becoming horn colored, lightest at tip; feet dull horn color.

Measurements of type (♀).—Wing, 348 mm.; tail, 325; tarsus, 107; culmen, 44. Average of 3 adult male topotypes (same dimensions): 357; 327; 110; 50. Average of 3 adult females, including type: 339; 311; 105; 44.

Remarks.—This well-marked subspecies of *Crax globicera* is another interesting example of the response to environmental conditions, under isolation, that has led to the development of differential characters in a number of species inhabiting Cozumel Island. The new form is based on 6 specimens from the type locality where this curassow was common at the time of our visit.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW PIGEONS FROM SALVADOR.¹

BY DONALD R. DICKEY AND A. J. VAN ROSSEM.

A series of band-tailed pigeons recently collected in the mountainous regions of Salvador prove to be readily distinguishable from the two heretofore recognized forms. Our series of the *Columbidae* also contains an apparently unnamed white-fronted dove. These races are characterized as follows:

***Columba fasciata letonai*, subsp. nov.**

SALVADOR BAND-TAILED PIGEON.

Type.—Male adult; No. 16,640, collection of Donald R. Dickey; Mt. Cacaguatique, Dept. San Miguel, El Salvador, C. A.; December 16, 1925; collected by A. J. van Rossem; original No. 9,714; altitude 3,500 feet.

Subspecific characters.—Differs from *Columba fasciata fasciata* Say in more grayish purple, rather than reddish purple, under parts and head; and in paler, more grayish, upper parts. Differs from *Columba fasciata vioscae* Brewster in having a distinct tail band; in darker coloration of the throat, which is nearly concolor with the foreneck; and in having the posterior under parts more extensively washed with color, and therefore less whitish. Wing decidedly more pointed than in either *fasciata* or *vioscae*, the tenth primary being uniformly and strikingly longer than the seventh, instead of being decidedly shorter, equal to, or only very slightly longer, as in all specimens of the other two races we have examined.

Measurements of type.—Wing, 204; tail, 138, exposed culmen, 18.3; tarsus, 24.5; middle toe minus claw, 30.1.

Range.—Oak regions of the cordilleran spurs which enter Salvador along the Honduras border, and also on Volcan San Miguel. It is possible that Nicaraguan records belong to this new race.

Remarks.—The six specimens examined are very much smaller than the California examples of *fasciata* we have seen, but Ridgway (Birds of North and Middle America, pt. 7, 1916, p. 288) lists birds from points in the United States that are as small as our Salvador series. The new form

¹Contribution from the California Institute of Technology, Pasadena, California.

may well prove to be very restricted in range, since Mr. Ridgway noted no differences between Guatemalan and northern specimens.

Most of the birds on which the new race is based were paired and in breeding condition in December, although large flocks of non-breeders and young were also much in evidence. These flocks were possibly migratory.

It is with the greatest pleasure that we dedicate this Salvadorian race to Dr. Marcos A. Letona, Secretary of Agriculture of Salvador, who spared no effort or courtesy in facilitating, by every means at his command, our field investigations in his country.

Specimens examined.—*Columba fasciata fasciata*: California, 10. *Columba fasciata vioscae*: Lower California, 11. *Columba fasciata letonai*: Salvador, 6.

***Leptotila fulviventris bangsi*, subsp. nov.**

BANGS WHITE-FRONTED DOVE.

Type.—Male adult; No. 17,639, collection of Donald R. Dickey; altitude 2,500 feet; Volcan San Miguel, El Salvador, C. A.; March 21, 1926; collected by A. J. van Rossem; original No. 10,714.

Subspecific characters.—Similar to *Leptotila fulviventris angelica* Bangs and Penard, but vinaceous of head, neck, and (to a lesser degree) chest brighter; upper parts, wings, and tail warmer, less grayish, brown. The iridescence of the nape and hindneck decidedly stronger and more richly colored. Differs from *Leptotila fulviventris fulviventris* in strikingly lighter forehead, and in lighter and less suffused under parts in general.

Range.—Salvador, south probably to Chinandega and the Matagalpa region of Nicaragua.

Remarks.—Mr. Ridgway (Birds of North and Middle America, pt. 7, 1916, p. 453) comments on the differences shown by Nicaraguan specimens, but the limited series at his disposal prevented him from formally naming the race. With the larger series now available from Salvador, it is evident that this extreme southern race differs constantly from the two heretofore recognized mainland forms.

The Salvador series, surprisingly enough, fails to prove the necessity of merging *fulviventris* with *verreauxi*, since the amount of rusty edging on the inner webs of the primaries, instead of being intermediate between *nuttingi* and *fulviventris* as would be expected, is in practice so slight as to approximate the condition found in *angelica*. The authors feel that these are merely geographic representatives of what may yet prove to be one species, but our Salvador material certainly fails to bridge this gap.

Specimens examined.—*Leptotila fulviventris fulviventris*¹: Yucatan, 3; Vera Cruz, 4. *Leptotila fulviventris angelica*¹: Chihuahua, 1; Texas, 6. *Leptotila fulviventris bangsi*: Salvador: Volcan San Miguel, 1; Mt. Cacagua-tique, 3; Lake Olomega, 3; Volcan Conchagua, 3; Rio San Miguel, 3; Puerto del Triunfo, 1; Sitio del Niño, 3; San Salvador, 1; Divisadero, 2.

¹Specimens in the Museum of Comparative Zoology, Cambridge, Mass.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW SPECIES OF APHIDIDAE FROM MINNESOTA.

BY F. C. HOTTES.

The following species of Aphididae apparently new to science were collected in Minnesota during the summer of 1926.

Neosymydobius mimicus, n. sp.

This species appears to be very closely related to both *N. chrysolepis* Swain and *N. albasiphus* Davis. The following key may be used to separate the alate forms of the three species.

Abdomen uniform brown, prothorax without lateral tubercles, segment six of antenna uniform dusky, fore wing with accessory vein, host *Q. chrysolepis*.

Neosymydobius chrysolepis.

Abdomen brown with a mid-dorsal whitish stripe, prothorax with lateral tubercles, segment six of antenna with apical half dusky, fore wing without accessory vein, host *Q. alba*.

Neosymydobius albasiphus.

Abdomen green with eight transverse bands of darker brownish-green on the dorsum, prothorax with lateral tubercles, fore wing with accessory vein, host *Q. alba*.

Neosymydobius mimicus, n. sp.

DESCRIPTION OF THE ALATE FORM.

Size about 2 mm. Head and thorax dusky-brown. Antennal segments I and II concolorous with head. Comparative lengths of antennal segments as follows: III 23-26, IV 20, V 13-15, VI 7-10+6. Apical half of III and IV and slightly less than half of V dusky, apical half of base and all of terminal process dusky. Secondary sensoria as follows: III 6-7, arranged in a straight row about evenly spaced, IV 0, V 0. Hair on antenna longer and more numerous than in either *N. chrysolepis* or *N. Albasiphus*. Eyes dark reddish brown. Beak reaching to or just beyond the base of the middle pair of coxae.

Thorax same color as the abdomen. Femora slightly dusky throughout. Tibiae uniform light yellowish-brown. Tarsi light dusky-brown. Fore wings considerably narrower in proportion to length than in *N. chrysolepis*, second branch of media about mid-way between first branch and margin of wing. Hind wings as in *N. chrysolepis*.

Abdomen green with eight transverse bands of greenish-brown on the dorsum. These bands do not extend across the abdomen but there are large spots of the same color at the sides of the segments. Cornicles and area around the base of the cornicles white. The cornicles are not as wide as those of *N. albasiphus*. Cauda brownish very inconspicuous. Anal plate of the same color as the bands on the dorsum, rather deeply bilobed and provided with numerous long hair.

DESCRIPTION OF THE APTEROUS FORM.

Length about 1.62 mm. Head and thorax dusky-brown. Segment I of antennae concolorous with head II slightly lighter in color. Segments III, IV, and V whitish with apical portions dusky. Base of VI light, rest dusky. There are no secondary sensoria. Proportional lengths of antennal segments as follows: III 21, IV 14, V 11, VI 8+5. Eyes as in the alate form. Beak extending slightly beyond the second pair of coxae. Legs as in the alate form.

Abdomen dusky brown, shining, in some specimens the abdomen has an indication of green. The segments appear to be separated at the lateral margins by a white space which sometimes extends across the abdomen, making it appear banded. Cornicles as in the alate form. Cauda as in the alate form. Anal plate rounded with hardly an indication of a dent in the posterior margin. Gonapods very large and covered with numerous long hair.

Type alate viviparous female collected on *Quercus alba*, Bemidji, Minnesota, July, 1926, F. C. Hottes, in the aphid collection of Dr. O. W. Oestlund.

Neothomasia abditus, n. sp.

This species is apparently closely related to *Neothomasia saliciortidis* Essig. Like the former species this species is found associated with *Fullawaya saliciradicis* Essig, feeding near the surface and sometimes on the roots of *Salix longifolia* growing in very sandy soil.

DESCRIPTION OF APTEROUS FORM.

Length, about 2.20 mm. Head yellowish-brown, eyes bright red. Segments of antennae with the following proportions: III 15, IV 9, V 9, VI 5+4. There are no secondary sensoria. Segments III and IV yellowish others slightly dusky. The beak is very long, always reaching beyond the metathoracic coxae.

Prothorax same color as the head, apparently without tubercles but very much swollen on the lateral margins. There is but little differentiation between the remaining segments of the thorax and the abdomen.

All segments except the tarsi of the prothoracic legs yellowish, tarsi dusky. Femora and tarsi of mesa and meta thoracic legs dusky-brown, tibiae of a uniform light-yellow. Tibiae of hind legs subequal to the sum of segments III, IV, V and VI of the antennae. In life there is a suggestion of a T or Y shaped area of a very light shade of violet on the dorsum of the mesa and meta thoracic segments. The remaining area is a light-fawn color sprinkled rather heavily with small dots of light brown from the center of which a hair projects. At the margins of the segments there are large blotches of light brown similar to those along the margins of the abdomen.

Color of abdomen light-fawn with small light-brown dots arranged in more or less regular transverse rows on the dorsum. Two rather wide bands of a very pale violet are indicated on the dorsum about in line with the cornicles. It is possible that this violet color is due to the "Mycetacytes" which in this species are very large. The cornicles are yellowish and about as long as they are wide at the base. The last two segments of the abdomen, cauda and anal plate are brownish. The cauda never extends to the end of the anal plate. The hair on the posterior part of the body is much longer than on any other part, being equal to or longer than segment VI of the antennae.

DESCRIPTION OF ALATE FORM.

Described from mounted material taken by Dr. Oestlund in 1921.

Size about 1.7 mm. Color apparently the same as in the apterous form.

Comparative lengths of antennal segments as follows: III 15-23, usually more than 15, IV 9, V 8, VI 6+5. Secondary sensoria as follows: III 12-15, IV 0-2, V 0.

Stigma of fore wing brownish. Second branch of media midway between first branch and margin of wing.

Other parts apparently the same as in the apterous form.

Type apterous viviparous female, collected on *Salix longifolia*, July, 1926, St. Paul, Minnesota (Friendly Sand Dunes), F. C. Hottes, in the aphid collection of Dr. O. W. Oestlund.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW GENERA AND A NEW SPECIES OF
APHIDIDAE.

BY F. C. HOTTES.

In a study of three species of Aphididae heretofore unrecorded from Minnesota, it has been found that two represent new genera and that the third is apparently new to science.

The type of *Carolinaia modestus* (alate viviparous female) here described as new is in the aphid collection of Dr. O. W. Oestlund.

Bipersona, gen. nov.

This genus may be placed in the tribe Macrosiphini. It may be easily and quickly separated from other genera belonging to this tribe by the peculiar structure of the cauda and anal plate. The genus *Bipersona* is closely related to the genus *Macrosiphoniella* Del Guercio, a genus which also shows many Aphidian characteristics. *Bipersona* has retained the short antennae, the short cornicles, and the lateral glands as well as the type of sensilla of the tribe Aphidini; these characters mask its true relationship to the Macrosiphini as is shown by the well developed antennal tubercles, the type of cauda, and the closed reticulations of the cornicles which are so characteristic of the tribe Macrosiphini. The very broad anal plate indicates clearly the descent of the Macrosiphini, as was first pointed out by Oestlund, from a Callipterian stock rather than from the Aphidini. The anal plate of this genus is unique and in itself furnishes a strong enough character upon which to establish the genus.

Characters.—Size large. Antennae six segmented, shorter than the body situated on well developed antennal tubercles. Sensoria with wide margins, present in both alate and apterous forms. Beak unusually long. Veination of wings normal for tribe. Cornicles cylindrical, of moderate length with closed reticulations at the apex. Abdomen supplied with lateral tubercles. Cauda broad at the base otherwise thin and twisted. Anal plate cauda-like very broad at the base tapering to a short cauda-like structure at the apex.

Genotype, *Aphis torticauda* Gillette.

Gillette described *Bipersona torticauda* from material collected in Colorado. Since then it has not been mentioned in literature. I took both alate and apterous forms late in June at Marshall, Minnesota.

Alphitoaphis, gen. nov.

Apparently two lines of stock gave rise to the tribe Aphidini as it is now understood. The older more primitive stock is represented by such genera as Chitophoroides, Gypsoaphis, Amphicercidus, Cedoaphis, Thargelia, and the present genus, a group of genera which represent few species. The more modern line is represented by comparatively fewer genera but these comprise by far the larger number of species. The type of this genus is not a typical Aphis, nor does it belong to any of the genera recently separated from Aphis. On the basis of the absence of the cubitus in the hind wing one might consider it a *Hysteroneura*, from which it differs both morphologically and biologically. Phylogenetically it seems to be more primitive than either *Aphis* or *Hysteroneura*.

Characters.—Antennae six segmented, secondary sensoria numerous with wide margins and raised membranes as in the genus *Gypsoaphis*, terminal process long. Venation of fore wings normal for tribe, cubitus of hind wings lacking. Abdomen without lateral glands or tubercles. Cornicles cylindrical of uniform thickness throughout. Cauda broad at the base tapering gradually to a point. Anal plate rounded. Body much rounded, pulverulent.

Genotype, *Aphis lonicericola* Williams.

Alphitoaphis lonicericola (Williams).

This species was taken several times in one of the city parks of Minneapolis on *Lonicera dioica glaucescens*, the leaves of which it causes to curl. It seems to prefer the more tender leaves as the leaves of the terminal branches are usually attacked.

DESCRIPTION OF APTEROUS FORM.

Length 2.125 mm. Head light yellowish-brown, eyes dark brown. Antennae reaching to the base of the cornicles, yellowish to light brown, apical half and terminal process dusky. Antennal tubercles slightly developed. Comparative lengths of antennal segments as follows: III 15–23, IV 12–15, V 11–15, VI 24–27. There are no secondary sensoria. The usual primary sensoria are present. Beak short hardly reaching to the base of the middle pair of legs, apical end dusky to blackish.

The thorax is the same color as the head, legs moderately long, all segments white or slightly yellowish with the exception of the tarsi which are blackish.

Abdomen highly arched, and wide appearing very much swollen, tapering quickly and uniformly from center to anterior and posterior ends. Color of abdomen pinkish buff (Ridgeway) shading to yellowish-brown at the sides and at the base of the cornicles. Cornicles cylindrical of small diameter and of uniform thickness throughout, length equal to or slightly

more than the fourth antennal segment, apical portions often dusky otherwise lighter in color than the rest of the abdomen oftentimes whitish. Cauda slightly more than one-half the length of the cornicles, bearing from four to six hairs on a side the apical ones of which are bent inwardly.

Anal plate rounded. Head, thorax and abdomen very sparsely but evenly covered with pulverulence.

DESCRIPTION OF ALATE FORM.

Length, about 1.8 mm. Head brownish, eyes dark brown. Antennae brownish, segments V and VI slightly lighter in color than III and IV. Comparative lengths of antennal segments as follows: III 24–26, IV 15–19, V 15–17, VI 30–35. Secondary sensoria with wide margins, numerous, irregularly arranged and distributed as follows: III 35–47, usually more than 40, IV 24–30 usually 30, V 14–17 usually 16. Primary sensorium on VI with a group of secondary sensoria on one side. Beak short, hardly reaching the base of the middle pair of legs, dusky to blackish at the tip.

Thorax darker than the head. Legs moderately long, yellowish-brown, tips of segments and tarsi dusky. Fore wings rather long and narrow, stigma long, yellowish-brown pointed at the apex, second fork of media midway between the first and the margin of the wing. Veins well developed yellowish-brown. Hind wings lacking the cubitus.

Abdomen not quite so highly arched as in the apterous form, rich golden-yellow with transverse somewhat broken bands of yellowish-brown on the dorsum and lateral portions. Posterior portion of abdomen and anal plate brownish, cauda yellowish. Cornicles of small diameter in length less than the fifth antennal segment. Cauda and anal plate shaped as in the apterous form.

The apterous form of this species was first described by Williams in his "Aphididae of Nebraska." Through the kindness of Prof. Myron H. Swenk of the University of Nebraska I have been permitted to study the type slide and to compare the specimens on it with material collected in Minnesota; the two agree very well.

I can not account for the statement made by Williams as to the color of this species being "reddish purple" unless color is an unstable character in this species.

Carolinaia modestus, n. sp.

The alate form of this species differs from *Carolinaia cyperi* Ainslie, to which it appears to be most closely allied, by the following characters: the third and fourth segments of the antennae carry numerous sensoria in contrast to the few placed in a single row and limited to the third segment in *C. cyperi*. The third antennal segment and the beak of this species are also much longer than these structures are in *C. cyperi*. The two species also differ in the shape of the cornicles, but perhaps the greatest difference comes in the shape of the cauda and the anal plate.

This species was collected on *Polytrichum commune*, a moss growing in two small areas in a woods a short distance from the University of Minnesota. The individuals of this species seem never to

be abundant. They are always found feeding singly on the branches of the moss. They seem to produce but few young. When disturbed they move away slowly or remain attached unlike other aphids.

DESCRIPTION OF THE APTEROUS FORM.

Size about 1.38 mm. Head from a deep chestnut to a dark dusky brown. Antennae brownish, situated on well developed antennal tubercles. Comparative lengths of antennal segments as follows: III 12, IV 7, V 8, VI 21 with but little variation. There are no secondary sensoria, the primary sensoria are free from hair. The sensorium on VI has a group of small secondary sensoria on one side. Joints V and VI somewhat darker than the others. Beak reaching to or beyond the base of the middle pair of legs. Thorax usually darker than the head. Legs moderately long, pale yellowish except tarsi which are light dusky.

Color of abdomen from a deep chestnut brown to a dark greenish-black. When a chestnut brown the sides and a small area around the base of the cornicles yellowish-brown, when greenish-black usually shining and with a bronzy cast. Cornicles yellowish-brown, lighter in color than the abdomen if it is brown, if the abdomen is greenish black then the cornicles are the same. Abdomen very wide for its length, somewhat arched, tapering uniformly to the head and cauda. Cornicles equal in length to the terminal process or to the sum of the second and third segments of the antennae, swollen on the inside and with the constriction just before the apex well developed. Cauda short broadly triangular, extending but little if any beyond the anal plate, with a very characteristic knob or bead-like structure at the apex. The sides of the cauda are serrate and bear three hairs each. The anal plate is wide with the posterior margin very little curved.

DESCRIPTION OF ALATE FORM.

Size about 1.36 mm. Head dusky brown. Antennae dusky, situated on well developed antennal tubercles. Proportional lengths of antennal segments as follows: III 21, IV 12, V 11, VI 25, with but little variation. Secondary sensoria numerous irregularly placed, distributed as follows: III 21-30, IV 10-11, V 2-0. Beak reaching to or beyond the base of the metathoracic coxae. Eyes reddish brown.

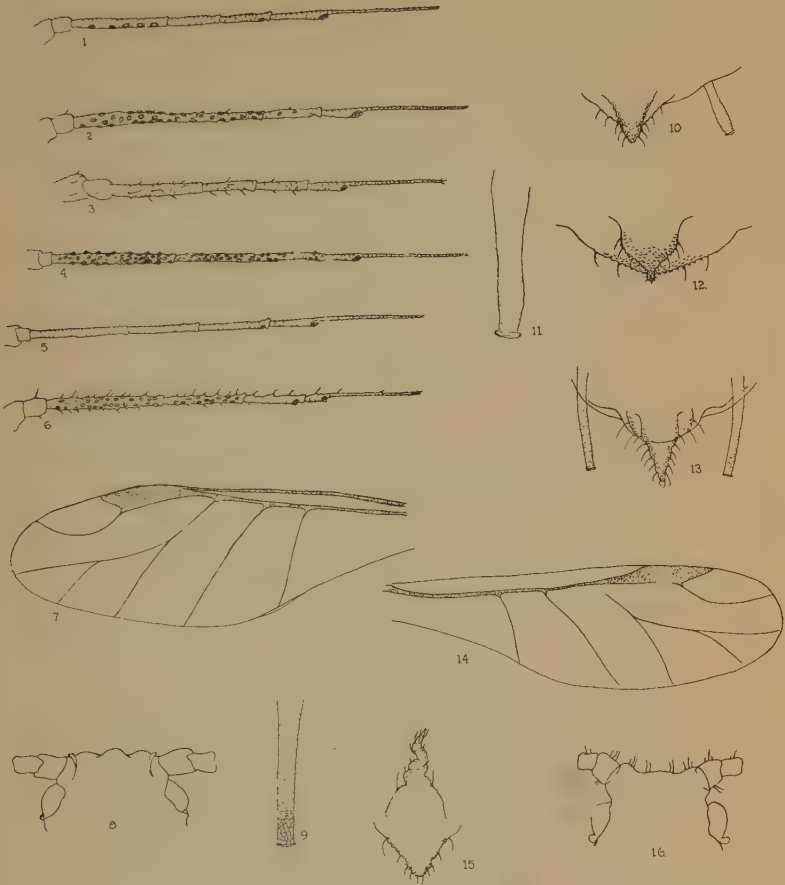
Thorax dark brown, anterior portion lighter in color. Legs of moderate length, brownish-yellow, distal ends of femora, tibiae, and tarsi darker. Stigma of fore wing short and thick, dark colored. Radial sector very much curved. Second branch of media closer to the margin of the wing than to the first branch. Hind wings with from one to three hamuli.

Abdomen chestnut brown with darker markings, sometimes yellowish brown at the margins and with a solid dark brown area in the middle. Cornicles yellowish-brown otherwise as in the apterous form.

EXPLANATION OF PLATE.

NOT ALL DRAWINGS MADE TO THE SAME SCALE.

1. Antenna of *Carolinaia cyperi* alate form.



Figs. 1-16. Antennae, wings, etc., of Aphididae.

2. Antenna of *Carolinaia modestus* alate form.
3. Antenna of *Carolinaia modestus* apterous form.
4. Antenna of *Alphitoaphis lonicericola* alate form.
5. Antenna of *Alphitoaphis lonicericola* apterous form.
6. Antenna of *Bipersona torticauda* apterous form.
7. Wing of *Carolinaia modestus*.
8. Head of *Carolinaia modestus*.
9. Cornicle of *Bipersona torticauda*.
10. Cauda, anal plate and cornicle of *Carolinaia cyperi*.
11. Cornicle of *Carolinaia modestus*.
12. Anal plate and cauda of *Carolinaia modestus*.
13. Cauda, anal plate and cornicles of *Alphitoaphis lonicericola*.
14. Wing of *Alphitoaphis lonicericola*.
15. Cauda and anal plate of *Bipersona torticauda*.
16. Head of *Bipersona torticauda*.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW *PEROGNATHUS* FROM THE VICINITY OF
MOUNT PINOS, KERN COUNTY, CALIFORNIA.

BY LAURENCE M. HUEY.

A small collection of mammals recently made in the vicinity of Mount Pinos, Kern County, California, by George G. Cantwell and acquired by the San Diego Society of Natural History, contained a series of an unusual silky *Perognathus* of the *parvus* group. The specimens show characters so different from those of the described forms that the race seems worthy of new subspecific designation and may be known as follows:

***Perognathus alticola inexpectatus*, subsp. nov.**

MOUNT PINOS POCKET MOUSE.

Type.—From 14 miles west of Lebec, Kern County, California, altitude 6,000 feet; No. 5724, Collection of the San Diego Society of Natural History; adult ♂; collected August 28, 1926, by George G. Cantwell, original number 216.

General Characters.—As compared with *Perognathus alticola*, its nearest relative, it averages larger, with a darker, tricolored tail, the black color of the tip extending at least half the total length of the member, dorsally; ears dark, instead of light, as in *P. alticola*, and more pointed.

Skull.—As compared with that of *P. alticola*, more rounded through the parietals, with nasals broader near tip; bullae squarer posteriorly, when viewed from side; maxillary arches spread less angularly or at a more gradual angle from line of skull.

Color.—Lower surface of body, fore and hind feet, white; sides, where darker dorsal parts are suppressed, vinaceous-buff (Ridgway, 1912), with clearest tone on face about the eyes, shading to a tone between ashy-lanous and wood brown, dorsally; ears covered with very fine dark hairs, almost black in color; white area restricted to a very small patch at lower edge of ear, and entirely lacking in two specimens; tail strikingly marked, being, dorsally, vinaceous-buff at base, shading to black at tip, with at least half the outer end of tail decidedly dark, the buff disappearing toward

the sides at about two-thirds the length of the tail from the base; under surface of tail white over the entire length; eyelids surrounding eyes, black.

Measurements.—*Type*: Total length, 176; tail, 97; hind foot, 22. Averages and extremes of four males, including type, two of which were sub-adult: Total length, 170.5 (160–181); tail, 88.2 (85–97); hind foot, 22.2 (22–23). *Skull (type)*: Greatest length, 25.9; spread of maxillary arches, 13.0; interorbital constriction, 6.2; length of maxillary tooth-row, 3.4; nasals, 10.0; greatest width of bullae, 13.8.

Range.—As far as known, 14 miles west of Lebec, Kern County, California, in an association of grassy flats among scattered yellow pines.

Specimens examined.—*Perognathus alticola alticola*: 2 from Squirrel Inn, San Bernardino Mountains, California, altitude 5,500 feet (topotypes);¹ 3 from one mile east of Strawberry Peak, San Bernardino Mountains, California, altitude 5,750 feet;¹ one from San Bernardino Mountains, California, altitude 5,400 feet;² total, 6. *Perognathus alticola inexpectatus*: 4 from the type locality.

¹Collection of Laurence M. Huey.

²Collection of San Diego Society of Natural History.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

STUDIES OF NEOTROPICAL OPHIDIA.
III.
ON *HELMINTHOPHIS FLAVOTERMINATUS*
(PETERS, 1857).

BY AFRANIO DO AMARAL.

Herpetologists who will ever deal with the Neotropical species *Helminthophis flavoterminalatus* will find it difficult to form a definite opinion as to whether or not this is a composite, especially if they rely only upon the bibliographic data as given out by Boulenger in his Cat. Sn. 1863. I: 5.

Indeed, having not long ago made a revisionary study of the genus *Helminthophis* (Proc. N. E. Zool. Club, 1924. IX: 25-30), I found it to be advisable to point out the inconsistency of Jan's figures for *H. flavoterminalatus* as especially shown in fascicles I, pl. VI, fig. 10f and 9, pl. I, fig. 6e of his *Iconographie Générale des Ophidiens*. Then, however, I did not emphasize the difficulties I myself had to overcome to be able to assign this species a proper place among the *Helminthophes*. For this reason, I thought it to be necessary to write this note wherein I can deal with this question more at length.

Peters, in Monatsber. d. königl. preuss. Akad. d. Wissensch. Berlin, 1857: 402, was the first herpetologist that referred to the species *flavoterminalatus* which he then included in the genus *Typhlops*. His original description was the following:

"T. corpore versus caudam crassiore; naribus inter scutella bina positus; scutello praecoculari scutellum superius tangente, capite caudaeque flavibus, corpore reliquo nigro vel brunneo, squamis marginis dilutioribus."

Three years later, Jan, in *Icon. Gén. d. Ophidiens*, Dec., 1860 (1861), fasc. I, pls. V and VI, fig. 10, figured the species *flavoterminalatus* under the new generic name *Idiotyphlops*. The type, he said, came from Caracas and belonged to the Hamburg Museum. According to the then

published Jan's plates, it had 24 scale rows and *its small ocular was separated from the third labial by a subocular.*

Later, Jan, in Arch. f. Naturgesch. 1861. I: 6, gave out the characters of his genus *Idiotyphlops* and discussed, in a footnote, the validity of Peter's genera *Rhinotyphlops* (type *albirostris*), *Typhlops* (type *flavotermi-natus*) and *Helminthophis* (type *frontalis*). Still in the same year, in Arch. Zool. Anat. Fisiol. Dec. 1861, I. 2: 186 (not Arch. Zool. Anat. Phys. 1862. 1: 186 as in Boulenger—Cat. Sn. 1893. I: 4), he emphasized the characteristics of his own genus *Idiotyphlops* by writing:

“Il genere *Idiotyphlops* mihi (tav. VI e VI f. 10), si distingue per la forma affatto particolare del nasale che ha una posizione orizzontale, per la straordinaria grandezza del primo labiale che al contrario negli altri Tiflopidi é sempre il più piccolo e per la posizione del piccolo scudetto in cui sta l' occhio.”

Peters apparently disliked Jan's above mentioned remarks on his genera, for he replied to Jan, by giving out, in Arch. f. Naturgesch. 1862. I: 43, a very detailed discussion of his own findings as compared with those of the latter herpetologist whom he in his turn very acrimoniously criticized. In his article he pointed out the disagreement between the characteristics of his own species *flavotermi-natus* and those assigned to it by Jan. He also showed how inaccurate most of the drawings made by Sordelli for Jan's Iconographie were, especially in this particular case. In regard to *the existence of a subocular that separated the ocular from the supralabials in flavotermi-natus* as shown in Jan's plate VI, fig. 10 f of fascicle I, Peters said:

“3) In Fig. f ist ein Suboculare gezeichnet, was gar nicht existirt, indem das Oculare grösser ist und mit seinem unteren Winkel zwischen drittes und viertes Supralabiale hinabgeht.”

In his Elenco Sistematico degli Ofidi (p. 15) published in Milan in March, 1863, Jan did not make any reference to Peters' opinion and just kept *Typhlops flavotermi-natus* as a synonym of *Idiotyphlops* (*Helminthophis*) *flavotermi-natus*.

Two years later, however, Jan, in Icon. Gén. d. Ophidiens. Feb. 1865, fasc. 9, pl. I, fig. 6, published new figures of *flavotermi-natus* in which one finds *the ocular definitely contiguous to the third upper labial*. The specimen whereon those drawings were based he said were sent from Caracas to the Paris Museum where it was studied.

Since, on the one hand, it has been proved to be hopeless for me to locate those specimens used by Sordelli for his drawings and referred to by Jan as existing, one in the Milan Museum (received from the Hamburg Museum) and the other in the Paris Museum; and since, on the other hand, neither Boulenger in his Catalogue of Snakes, nor any of the less modern authors seems to have attempted to extricate this rather curious case of inconsistency of characters as assigned to *flavotermi-natus*, it might as well appear impossible for anybody at present to find out whether or not *flavotermi-natus* is a composite species. Therefore, it was my privilege

and luck to have happened to find, in the Library of the Museum of Comparative Zoölogy, a copy of a leaflet published probably in 1864 by Jan himself under the title of "Avis aux Naturalistes et Subscripteurs à l'Iconographie Générale des Ophidiens," on page 32 of which we meet with the following statement about the characteristics of the ocular in *Idiotyphlops*:

"Oculaire petite, squamiforme, à contact de la troisième labiale."

Moreover, in a footnote on the same page, Jan added as regards the contiguity of the ocular with the 3d labial:

"Ce caractère n'est pas indiqué sur la figure 10 f (Icon. livr. I, pl. VI) dont l'exactitude laisse beaucoup à désirer. Des détails diligemment reproduits seront publiés sur la pl. I (Icon. livr. 9)."

Now, I believe this statement by Jan himself definitely settles the question and shows that *Helminthophis flavoterminalis* is not a composite.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW KANGAROO MOUSE FROM NEVADA.

BY E. A. GOLDMAN.

The following description of a new subspecies of kangaroo mouse from western Nevada is published in advance of a revision of the genus now in progress. For the privilege of examining important material bearing upon the status of the various forms embraced in this little known group of rodents I am indebted to Mr. Donald R. Dickey and to Dr. Joseph Grinnell, of the Museum of Vertebrate Zoology, University of California, Berkeley, California.

***Microdipodops megacephalus lucidus*, subsp. nov.**

CLAYTON VALLEY KANGAROO MOUSE.

Type.—From sand dunes in Clayton Valley, 8 miles southeast of Blair, Nevada (altitude about 4,500 feet). No. 210,397, ♂ adult, U. S. National Museum (Biological Survey collection), collected by Luther J. Goldman, October 19, 1915. Original number 2424.

General Characters.—Similar in size and color and evidently closely allied to *M. pallidus*, but cranial characters distinctive, the mastoid and audital bullae averaging still larger, rostrum more slender, and dentition lighter.

Color.—*Type*: Middle of face, top and sides of head, and general dorsal area very light buff, very finely lined with black; under parts, sides of muzzle, forelimbs, hind feet, and lower part of sides pure white; longer and heavier vibrissae black mixed with finer, less conspicuous white facial bristles; supraorbital and postauricular white spots present; tail buffy whitish above, pure white below.

Skull.—Much as in *M. pallidus*, but mastoid and audital bullae usually larger, the audital bullae more rounded and more fully inflated in front of foramen magnum; supraoccipital and interparietal narrower; rostrum more slender; zygomata less widely spreading; nasals shorter; dentition lighter; the incisors decidedly narrower.

Measurements.—*Type*: Total length, 158 mm.; tail vertebrae, 81; hind foot, 26. *Skull* (type): Length (median line), 25.5; greatest width (be-

tween outer sides of audital bullae), 19.9; zygomatic breadth (immediately in front of audital bullae), 11.4; length of nasals, 9.6; interorbital breadth, 11.4; maxillary tooth row, 3.7; width of upper incisors (cutting edge), 1.

Remarks.—The extreme development in size and inflation of mastoid and audital bullae known in the genus *Microdipodops* is presented in the form here described. Owing to expansion the mastoids nearly meet on the median line, reducing the interparietal and supraoccipital to an exceedingly narrow space between them. No close comparison with *M. polionotus*, a geographic neighbor from the Owens Lake basin is necessary as the latter is readily distinguished by much smaller, less inflated mastoid and audital bullae, wider, less compressed interparietal and supraoccipital, and other differential characters. It was found at the type locality only in dunes of white drifting sand which occupy a limited area surrounded by harder soil.

Specimens examined.—Seven, all from the type locality.

PROCEEDINGS
OF THE
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ON SOME COCCINELLIDAE OF THE TRIBE TEL-
SIMIINI, WITH DESCRIPTIONS OF NEW
SPECIES.

BY EDWARD A. CHAPIN.

The investigations upon which this paper is based were undertaken in order to determine specifically two small black coccinellids which are proving to be valuable predators on diaspine scales. One of them is from the island of Guam, where it feeds extensively on the cocoanut scale, *Aspidiotus destructor* Sign.; the other, originally from Foochow, China, has been introduced into California as an enemy of diaspine scales infesting citrus fruits.

The tribe *Telsimiini* may be defined as follows: small pubescent Coccinellidae having the epistoma broadly explanate, the lateral extensions of which partially bisect the eyes and having but five visible abdominal sternites. Their nearest relatives are the *Platynaspini*, which are pubescent and have six visible sternites and the *Chilocorini*, which are glabrous.

In the descriptions given below it has seemed advisable to note, in addition to the length and breadth, a third dimension designated as altitude. This is the vertical measurement of the elytra only, without reference to the body proper. By comparing this measurement with the breadth or length, an index of the convexity of the species is obtained.

Telsimia Casey.

- Telsimia* Casey, 1899, Journ. New York Ent. Soc., Vol. 7, p. 165.
Lipernes Blackburn, 1889, Trans. Roy. Soc. South Australia, Vol. 11, p. 212 (nec. *Lipernes* Waterhouse).
Notolipernes Blackburn, 1900, Trans. Roy. Soc. South Australia, Vol. 24, p. 68 (new name for *Lipernes* Blackburn).
Platynaspis Weise, 1900, Deutsch. Ent. Zeit., Vol. 44, p. 422 (nec. *Platynaspis* Redtenbacher).

As will be shown later in this paper, this genus is distinct from *Boschalis* Weise but is the same as Blackburn's *Notolipernes*. Blackburn in 1889 proposed the new genus *Lipernes* for a new species of Coccinellidae from

Port Lincoln, *Lipernes angulatus*, comparing it with the genus *Pharus* Muls. and *Bucolus* Muls. Both of these genera belong in another tribe. Three other Australian species were added to the genus by the same author in the next decade. In 1900, realizing that *Lipernes* was preoccupied, Blackburn proposed as a substitute name *Notolipernes*, not recognizing the fact that the same genus had been described and named the year before by Casey. There are two species of "*Notolipernes*" in the Museum collection. One of these is represented by a single specimen taken at Toowoomba, Queensland by Albert Koebele. This is one of two specimens, the other having been sent to Blackburn who retained the specimen and returned the name "*Lipernes subviridis* Bkcb." The other species is represented by a series of nineteen specimens, seven from Gosford, four from Paramatta, three from Sydney and five with only the locality Australia. There is no doubt that two species are indicated and either fits the short description given by Blackburn. Since Blackburn did not personally examine the Toowoomba specimen and since the other specimens are in part from the type locality of *L. subviridis* Bkcb. I prefer to attach the name *Telsimia subviridis* (Bkcb.) to the second lot and hold the single Toowoomba specimen as belonging to an unknown species. Neither of these two species has any characteristic of generic value by which it might be separated from *Telsimia tetrastica* Casey, the type species of *Telsimia*.

The species of *Telsimia* discussed in this paper may be separated by means of the following key.

1. Pronotum conspicuously more coarsely and densely punctured at the sides; metacoxal arcs complete, the metacoxal lines meeting the anterior margin of the sternite a short distance in from the lateral margin.....*subviridis* (Bkcb.).
 Pronotum evenly and finely punctured over its entire surface; metacoxal arcs incomplete.....2.
2. Form subhemispherical; second, third and fourth sternites each with a single row of large punctures.....*ceylonica* (Weise).
 Form convex; sternites less coarsely and more densely and irregularly punctured.....3.
3. Posterior margin of fifth abdominal sternite of male feebly bisinuate, metasternum with a short, median, finely-impressed line running forward from the posterior margin, metasternum rather coarsely and evenly punctured.....*nigra* (Weise).
 Posterior margin of fifth sternite of male not bisinuate, metasternum without median impressed line.....4.
4. Fifth sternite of male simple, metasternum finely and sparsely punctured, metacoxal arcs fail to reach lateral margin..... **nitida** Chpn.
 Fifth sternite of male semi-circularly emarginate at apex, metasternum moderately coarsely and evenly punctured, metacoxal arcs reach lateral margins..... **emarginata** Chpn.

Telsimia ceylonica (Weise).

Platynaspis ceylonica Weise, 1900, Deutsch. Ent. Zeit., Vol. 44, p. 422.

There is a single specimen in the collection, taken by Koebele in Ceylon, which I refer to this species. It differs from Weise's description only in the intensity of the pale coloration of the abdomen and epipleurae of the elytra.

This species is shorter and more globose than any other member of the genus known to me and the metasternum is noticeably more convex. The punctation of the metasternum is coarse but sparse, especially so posteriorly. The spaces enclosed by the metacoxal arcs are impunctate, the median portion of the first sternite nearly so. The metacoxal arcs run parallel to the posterior margin of the sternite and attain the lateral margin. The dimensions of the specimen before me are: length, 1.55 mm.; breadth, 1.25 mm.; altitude, .70 mm.

Telsimia nigra (Weise).

Pentilia nigra Weise, 1879, Deutsch. Ent. Zeit., Vol. 23, p. 149.

Platynaspis nigra (Weise), Weise, 1900, Deutsch. Ent. Zeit., Vol. 44, p. 422.

The Museum collection contains fourteen specimens of this species, eight of which are from the type locality (Nagasaki) and fit the original description in all particulars except for a slight variation in the intensity of the pale coloration of the sides of the pronotum.

The pubescence of the upper surface is, with the exception of the hairs on the explanate margin of the epistoma, grayish white. The epistomal hairs are tinged with yellow. Beneath, the pubescence of the insect is depressed and quite inconspicuous. The thorax and abdomen are rather densely set with punctures which are much more coarse than those on the dorsum. The metacoxal arcs are as in *T. ceylonica* (Ws.). The areas enclosed by the arcs and the narrow hind margin of the metasternum between the hind coxae are almost impunctate. The terminal sternite of the male is feebly bisinuate and carries a shallow median depression before the apex. A typical example has the following dimensions: length, 1.85 mm.; breadth, 1.50 mm.; altitude, .70 mm. The length of the type specimen as given in the original description is two-thirds of a line. This is corrected in the later reference to seven-eighths of a line or roughly 2 mm.

Telsimia nitida, n. sp.

Form elliptical, one-third longer than wide. Black, under parts very dark piceous, antennae, trophi and legs castaneous. Head, except epistoma, very finely and rather densely punctured, sparsely pubescent with short gray to golden hairs. Explanate margin of the epistoma almost impunctate, broadly but shallowly emarginate anteriorly. Pronotum short, conspicuously and broadly angulate in front of the scutellum, base narrowly margined, punctures very fine, rather dense, evenly distributed over the entire surface. Pubescence gray, moderately dense, more conspicuous toward the lateral margins which are narrowly explanate. Elytral punctation and pubescence similar to that of the pronotum, basal and sutural margins plain, lateral margin finely beaded. Under parts of thorax finely and not densely punctured, the posterior median area of the metasternum almost impunctate. Median area of first sternite and rest of sternites

more coarsely and densely punctured than the sterna of thorax, lateral portions of first sternite and narrow posterior margin of the same segment smooth and virtually impunctate. Metacoxal arcs fail to reach the lateral margins of the sternite by a short distance and are turned slightly anteriorad at their extremities. Femora sparsely and rather finely punctured.

Male.—The posterior margin of the fourth sternite is broadly arcuate, the median portion of the arc almost straight. The fifth sternite is evenly rounded and bears a very shallow median depression before the apex.

Female.—The posterior margins of all sternites except the fifth are straight, the fifth is similar to that of the male but lacks the median depression.

Dimensions: Length, 1.60 mm.; breadth, 1.20 mm.; altitude, .65 mm.

Described from a male specimen (type) and a series of forty-five specimens of both sexes (paratypes) collected on the island of Guam by Edwards, Evans, Fulloway and Vandenberg.

Type and paratypes: U. S. National Museum, No. 40,133.

***Telsimia emarginata*, n. sp.**

Form ovate, five-eighths longer than wide, more strongly tapering posteriorly than anteriorly. Black, antennae, trophi and legs castaneous. Upper surface, with the exception of the smooth margin of the epistoma, finely and densely punctured. Pubescence gray, dense, short and depressed, evenly distributed. Prosternum coarsely and densely punctured, metasternum more finely and less densely punctured, the punctation more dense toward the lateral margins. First abdominal sternite rather finely and sparsely punctured, metacoxal arcs strongly defined, their outer halves parallel to the posterior margin of the segment almost to the lateral margin where the line is turned posteriorad for a short distance. Areas enclosed by the arcs with a few punctures on the posterior halves. Second and succeeding sternites densely and finely punctured. Femora finely and sparsely punctured.

Male.—The posterior margin of the fourth abdominal sternite is straight. The fifth sternite is twice as long as the fourth and bears at the apex a semi-circular emargination. Just anteriorad to the emargination and on either side of the median line there is a slightly tumid area.

Female.—The posterior margin of the fourth sternite is straight, as in the male. The fifth sternite is rounded behind.

Dimensions: length, 2.25 mm.; breadth, 1.40 mm.; altitude, .75 mm.

Described from a male specimen (type) and a series of thirty-six specimens of both sexes (paratypes) collected at Foochow, China, by F. Silvestri and forwarded to the National Museum by H. Compere of the University of California Citrus Experiment Station, Riverside, Calif. Four of the paratypes have been dissected and mounted in balsam by H. S. Barber.

Type and paratypes: U. S. National Museum, No. 40,134.

***Boschalis* Weise.**

Boschalis Weise, 1897, Deutsch. Ent. Zeit., Vol. 41, p. 304; 1903, Arkiv Zool., Vol. 1, p. 58.

Apparently Weise was in error in suppressing *Telsimia* Csy. as a synonym of *Boschalis* Ws., for the characters given for the latter genus in the original description are quite different from those which I find in the type specimen of *Telsimia tetrastica* Csy., the type species of *Telsimia*. In the first place, the elytra are very obviously pubescent in *Telsimia*; they are glabrous in *Boschalis*. The prosternum is moderately long, is horizontal, and extends broadly in front of the anterior coxae in *Telsimia*; in *Boschalis* the median portion is quadrate and anteriorly it is strongly deflexed. Antennal grooves are absent from the prosternum in *Telsimia*; they are present in *Boschalis*.

On the other hand, Weise has included at least two species of *Telsimia* in *Platynaspis*: *T. nigra* (Ws.) and *T. ceylonica* (Ws.), from which I must conclude that he had a totally wrong conception of Casey's genus.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SPECIES OF GYMNANTHES FROM TEXAS.

BY PAUL C. STANDLEY.¹

The genus *Gymnanthes* is a small American group of the family Euphorbiaceae. It is represented in Mexico by two species, one of which, widely distributed in the West Indies, occurs also upon the keys of southern Florida. The discovery of the genus in Texas is not surprising, since one species has been described from the State of San Luis Potosí, Mexico.

The plant described below is one of a large collection made in the summer of 1925 by Prof. B. C. Tharp in regions of western Texas which have been little explored botanically.

Gymnanthes texana Standl., sp. nov.

Branchlets slender, terete, grayish brown, with numerous pale lenticels, leafy near the apex, when young minutely puberulent; petioles stout, 3-5 mm. long, glabrous; leaf blades suborbicular to broadly elliptic or ovate-elliptic, 3-4 cm. long, 2-2.5 cm. wide, broadly rounded to acute at apex, rounded to broadly cuneate at base, obscurely crenate-serrate, coriaceous, pale green, glabrous, densely and finely punctate beneath; staminate spikes solitary, very dense, about 6 mm. long; bracts 3-flowered, broadly ovate, obtuse or acutish, obscurely and minutely ciliolate; flowers short-pedicellate, glabrous; sepals minute, lanceolate or subulate; stamens 3 or 4; pistillate flowers unknown.

Type in the U. S. National Herbarium, No. 1,285,357, collected on the Nueces River in Edwards County, Texas, Aug. 9, 1925, by B. C. Tharp (No. 3634).

The Texan plant is related to *G. longipes* Muell. Arg., but that Mexican species, according to descriptions, differs in having much narrower, cuspidate-acuminate leaves, and 2 or 3 stamens in each flower.

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PROCEEDINGS
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THREE NEW MAMMALS FROM CHINA.

BY A. BRAZIER HOWELL.

In identifying the mammals of the valuable collections of Chinese vertebrates secured during the last few years by Arthur de C. Sowerby and presented to the U. S. National Museum there were encountered several series representing well-marked geographical races for which no names are at present available. Three of these may be known as follows:

Crocidura grisea, sp. nov.

Type.—Female adult, skin and skull No. 238229, U. S. National Museum, from 75 miles southwest of Yenpingfu, Fukien, China, altitude 500 feet; November 23, 1921. Collected by Arthur de C. Sowerby; original number 1076.

Diagnosis.—The smallest of the all-gray Chinese members of the genus so far known.

Skin.—In coloration this animal is pure slate gray faintly grizzled above, of a shade apparently different from any Chinese shrew so far named. Nor can the color be matched in any European species known to the writer, but it can be duplicated among the lighter examples of the American *Neosorex navigator*. Ventrals the coloration is slightly paler and more silvery than is the case dorsad. The tail is rather long for the size of the body and is lighter below than above, but it can not be said to be bicolor. The caudal bristle hairs are few in number. The dorsum of the hind feet is dusky along the lateral margin.

Skull.—The skull is of about the same length as that of *attenuata*, as figured by Milne-Edwards (1868-1874), but the cranium proper is relatively shorter and the postorbital dilation is stronger and more abrupt. The first upper unicuspid is very broad in an antero-posterior direction, its total width being practically as great as the width of the root of the incisor. The second unicuspid is considerably the smallest but its crown is as high as that of the third. The anterior cusp of the carnassial is less than half the height of the main cusp, but equal in height to the third unicuspid.

Measurements of type.—Collector's measurements of the type are: head and body, 70; tail, 56; foot, 12; ear, 9 mm. The total length of the skull

is 20; width of braincase, 9; interorbital width, 4.6; and length of maxillary tooth row, 6.5 mm.

Material.—Three skins and skulls, all from the vicinity of the type locality.

Remarks.—The relationship of this shrew apparently is with *attenuata*. From the latter it certainly differs, for Milne-Edward's plates, as well as his descriptions, are trustworthy, and *grisea* not only is without any brown dorsad, but the flanks are much darker. Certainly it has nothing in common with the other gray, but large-footed, shrews of China.

***Myotis sowerbyi* sp. nov.**

Type.—Female adult, skin and skull No. 238869, U. S. National Museum, from near Yenpingfu, Fukien, China, altitude 3000 feet; April 7, 1922. Collected by Arthur deC. Sowerby; original Number 1366.

Diagnosis.—Skin and superficial characters of the skull much as in the European species *mysticinus*, but color much darker and more smoky, with no brown, and the membrane black instead of brownish. The concavity of the posterior border of the ear is more pronounced and the tragus is much narrower. Mandible with canine practically no higher than large first premolar, and second premolar minute, instead of canine large and both premolars small as in *mysticinus*.

Skin.—The dorsal surface is close to the clove brown of Ridgway (1912). The hairs of the under surface are for the most part dark at base with paler buffy tips, but in the anal region they are buffy to the base. Both interfemoral and wing membranes are practically naked. The digital hairs are scanty and do not extend beyond the claws. The feet are of but moderate size. In the spirit specimens the terminal vertebra of the tail extends free of the membrane, but this is not satisfactorily apparent in the dried skins. The wing membranes extend well onto the base of the toes. The ear is narrow, but not to the same extent as in the next species, and the distal half of the posterior margin is gently concave. The tragus is narrow and acute, and measured from the notch, extends more than half the distance to the tip of the ear.

Skull.—The braincase is rather small, the interorbital declivity gentle when viewed in profile, and there is no appreciable elevation of the tip of the rostrum. The more posterior of the small upper premolars is half the size of the anterior and in the tooth row. The outer upper incisor is considerably smaller than the inner. The lower canines are very low indeed and of lesser height than the main cusps of some of the molars. The first lower premolar, however, is relatively very large, and but a shade smaller than the canine, while the second lower premolar is minute.

Measurements of type.—The collector's measurements of the type are: head and body, 40; tail, 37; ear, 11; forearm, 34 mm. Additional measurements are: tarsus, 15.3; foot, 8.3; length of skull, 13; zygomatic width, 7.9; maxillary tooth row, 5.7 mm.

Material.—One skin and skull from Foochow, Fukien, and 15 skins and skulls, and 38 spirit specimens from Yenpingfu, Fukien.

Remarks.—It is felt that the dental differences between *sowerbyi* and

mysticinus are beyond any doubt of specific degree. There has been no opportunity for comparison with unquestioned *siligorensis* Hodgson, but even the describer regarded it as perhaps identical with *mysticinus*. Dobson always considered it in this light, and Wroughton (1918) recognizes it as the Indian representative of *mysticinus* but offers no comparisons. It is hardly likely that such important dental differences as occur in the mandible of *sowerbyi* could have been overlooked by all of these authorities.

***Myotis hirsutus* sp. nov.**

Type.—Female adult, skin and skull No. 238863, U. S. National Museum, from near Yenpingfu, Fukien, China, altitude 2000 feet; April 7, 1922. Collected by Arthur deC. Sowerby; original Number 1358.

Diagnosis.—A *Myotis* of the general type of the European species *capaccinii*, but coloration duller and much darker, tail longer, forearm a trifle shorter, and ear darker and narrower. The hairiness of the membranes is not quite so well marked. Skull slightly smaller and upper outer incisor larger.

Skin.—In coloration the dorsal surface is near the fuscous of Ridgway (1912). The hairs of the underparts are much paler distad, and darker at base over most of this area. In the anal region, however, they are pale at base as well. The ventral surface of the interfemoral membrane is quite heavily (relatively) haired for some 5 mm. caudad of the body and 4 mm. mediad of the legs, the remainder of the membrane being very scantily haired. The under surface of the wing membrane caudad of the brachium is scantily haired as far laterad as the elbow, but the upper surface is bare. Dorsad the interfemoral membrane is well haired as far caudad as the middle tail. The terminal vertebra of the tail is not free. The wing membrane arises from the tarsus or ankle—not the toes. The foot is relatively large and the digital hairs extend beyond the nail tips. The ears are long and unusually narrow, the middle of the posterior border being quite sharply concave. The tragus is slender and acute, and measured from the notch in the dried skin, does not extend half way toward the tip of the ear.

Skull.—The braincase is moderately inflated and the rostrum rather long, the elevation of its tip being very slight. The upper outer incisor is almost or quite as long as the inner. The second small premolar is at least half and usually two-thirds as large as the first and is always in the tooth row. The lower incisors are rather crowded.

Measurements of type.—The collector's measurements of the type are: head and body, 48; tail, 38; ear, 15; forearm 40 mm. Other measurements are: tarsus, 15.2; foot, 10.1; length of skull, 15.1; mastoid width, 7.5; and maxillary tooth row, 6.7 mm.

Material.—Twelve skins and skulls and one spirit specimen from Yenpingfu, Fukien.

Remarks.—This bat is definitely distinct from anything so far described from China. In coloration it is comparable with *pequinius* Thomas but the latter is much larger. As already mentioned, its conformation is of the general type of *capaccinii*, and it may later prove to be the Chinese representative of that species.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

SOME NOTES ON THE BIRDS OF THE WASHINGTON, D. C.,
REGION.

Recently, while looking over my notes made during the past few years on the birds of the Washington area I came upon a few observations that extend the recorded season for the respective species in this region. It seems desirable that they be made available in published form.

Hirundo erythrogastra.—One noted over the Eastern Branch on September 23, 1921. This is two days later than the latest previous record which was made by myself on September 21, 1920.

Dendroica vigorsii.—Under date of March 8, 1922, I received a letter from Carlyle S. Baer, of Washington, D. C., in which he reported the observation by him of "several" individuals of this species in Rock Creek Park on March 5, 1922. This is one day earlier than the previous early record of March 6, 1910, made by Prof. W. W. Cooke.

Hylocichla fuscescens fuscescens.—One individual of this thrush observed at close range for several minutes at Plummers Island, Maryland, on April 9, 1922. Conditions of light and the proximity of the bird made easy identification even without the aid of field glasses. This antedates by eleven days the previous early record for this region, that of Dr. A. K. Fisher on April 20, 1889.

—Frederick C. Lincoln.

NOTE ON MYIOTHERA LORICATA S. MÜLLER.

Myiothera loricata S. Müller (Tijdschrift Nat. Geschiedenis Physiologie, II, "1835" 1836, p. 348, pl. ix, fig. 5), for the timaline species known as *Turdinus loricatus*, is preoccupied by *Myiothera loricata* Lichtenstein (Verz. Doubletten, 1823, p. 44), for a Brazilian species of the family Formicariidae. *Turdinus loricatus* (S. Müller) will therefore require a new name, for which *Turdinus marmoratus* R. G. W. Ramsay (Proc. Zool. Soc. London, 1880, p. 15) seems available.

—Charles W. Richmond.

LIFTING POWER OF THE MALLARD.

In these days when the transportation of mail and merchandise by aircraft is an important problem for the aeronautic engineer, who must reconcile the weight of his cargo to the weight of the craft and the power of the engine, it is interesting to note the lifting power of certain birds. The available data on this subject relate principally to the weights of objects carried by birds of prey and fish-eaters, groups that are conspicuous by the broad expanse of their wings, implying lifting power that might equal or even exceed the weight of the bird. Even in these cases, however, the weight of the object carried is frequently a matter of conjecture.

A drake mallard was banded by the writer (Biological Survey, No. 409,535), at Crane Lake, near Bath, Illinois, on January 8, 1926, and under date of May 1, 1926, a return was reported for it from Spooner, Wisconsin, by Edward Morrell, who stated that it had been caught in a No. 1 Victor steel trap. According to the report, the bird had flown with trap and chain to this point, where the chain became entangled in some bushes. The figures given for the weight of this trap are $7\frac{1}{4}$ pounds per dozen, or $9\frac{2}{3}$ ounces for each trap with chain. This varies slightly, depending upon the length of the chain attached, so that 10 ounces is probably a fair average weight. A mallard drake in good condition will weigh between 2 and 3 pounds.

The banded bird was alive when found, although very weak from lack of food and its struggles to escape. Mr. Morrell fed and cared for it for about two weeks when it had recovered sufficiently to be liberated, still carrying the numbered band but free of the encumbering trap.

—Frederick C. Lincoln.

ON THE NAME PHALACROCORAX VIGUA.

In the "Recueil d'Observations de Zoologie et d'Anatomie Comparée" of Humboldt and Bonpland, there is a description of a "nouvelle espèce de pélican," *Pelecanus olivaceus*, by Humboldt, which proves to be the species later (1817) described by Vieillot under the name *Hydrocorax vigua*. In the first edition of the "Observations" the name *Pelecanus olivaceus* is mentioned on pages 15 and 18, where there is some comment on its larynx, illustrated on plate I, but on page 47, under the heading "Additions," there is a full description, with the habitat given as "prope Banco ad Magdalenae fluminis ripas, lat. $8^{\circ} 55'$." In the later edition of the work the same description is introduced on page 6 (note) of Vol. I, dated 1811. It follows that the name of this cormorant will become *Phalacrocorax olivaceus olivaceus* (Humboldt), and that of the subspecies that extends north to the United States will be *P. o. mexicanus* (Brandt).

An announcement of the plan of publication of the "Observations" in the Journal Typographique, viii, 5 Germinal, 1805, p. 270, states that "le premier cahier paroitra en mai," and I have little doubt that it was published in May, 1805. Several other names are introduced in the first part of the "Observations," including the following birds: *Palamedea bispinosa*, *Phasianus garrulus*, and *Cygnus canorus*, the latter hardly more than a *nomen nudum*.

—Charles W. Richmond.

NASUTITERMES (N.) BENJAMINI, A NEW NAME
FOR EUTERMES INSULARIS SJÖSTED.

"*Eutermes*" *insularis* Sjöstedt, 1924, Rev. Zool. Afr. 12, 4, p. 494, described from the nasutus caste from the Island of Mauritius is preoccupied by "*Eutermes*" *insularis* Holmgren, 1910, Mitteil. Naturhist. Mus. in Hamburg XXVII, p. 239, described from the nasutus from Costa Rica.

I herewith give Sjöstedt's species from Mauritius the name **Nasutitermes (Nasutitermes) benjamini**, nov. nom., Snyder in honor of Dr. Marcus Benjamin, editor of the U. S. National Museum. *Nasutitermes* Banks replaces *Eutermes* Fritz Müller.

—Thos. E. Snyder.

TERMES (ODONTOTERMES) PRAEVALENS, A NEW NAME
FOR O. ROBUSTUS JOHN.

In my paper "Termiten von Ceylon, der Malayischen Halbinsel, Sumatra, Java und den Aru-Inseln," Treubia, VI, 1925, I described (p. 387-388) a new species of *Odontotermes* from Johore under the name of *O. robustus*. Dr. Thos. E. Snyder was kind enough to draw, in a private letter, my attention to the fact that this name has been used in 1924 by Prof. Dr. Y. Sjöstedt, who described a new species from the French Congo as *O. robustus*. The MS of my paper was completed in 1923 and sent to Buitenzorg for publication at the beginning of 1924 so that the use of a preoccupied name could not be avoided, the more as I had no opportunity of seeing Dr. Sjöstedt's paper. Therefore, taking advantage of Dr. T. E. Snyder's obliging compliance, I bring forward to replace the name of *Odontotermes robustus* John (nec Sjöstedt) by **Termes (Odontotermes) praevalens**, nom. nov.

—Oscar John.

A NEW NAME FOR FELIS (CATOPUMA) MELLI MATSCHIE,
AND NOTE ON THE NOMENCLATURE OF FELIS
PARDUS CENTRALIS LÖNNBERG.

While working over certain cats of the genus *Felis*, it was noted that the name *Felis (Catopuma) melli* Matschie (Archiv Naturgesch., 88, 1922; 36), which has been applied to an apparently well marked race of the *Felis temmincki* group, is preoccupied by *Felis (Neofelis) melli* Matschie (*ibid.*; 35), the describer evidently having considered that congeneric forms of different subgenera could bear the same specific name. Such a practice is not permitted by present good usage, however, and as a substitute, the name ***Felis temmincki badiodorsalis*** is herewith proposed.

Attention should also be called to the fact that *Felis pardus centralis* Lönnberg (Kungl. Svenska Vetenskapsakad. Handl., 58, 1917; 49) is preoccupied by *Felis centralis* Mearns (Proc. Biol. Soc. Wash., 14, 1901; 139). If the African animal now known as *centralis* proves to be a valid race it will consequently need a new name, but none is here suggested for the reason that its distinctness as a subspecies is now a matter of some controversy and it is not wished to add another name to the synonymy without certain reason.

—A. Brazier Howell.

NEW NAMES FOR FIVE AMERICAN ASTERACEAE.

The new names proposed in this paper are based on the examination of the types of the species concerned by the writer in the summer of 1925.

***Vernonia tortuosa* (L.) Blake.**

Conyza tortuosa L. Sp. Pl. 2: 862. 1753.

Conyza scandens Mill. Gard. Diet. ed. 8. *Conyza* no. 11. 1768. Not

Vernonia scandens DC. 1836.

Vernonia schiedeana Less. *Linnaea* 6: 399. 1831.

The status of these names has been discussed by Britten.¹ Linnaeus' treatment in the *Species Plantarum* is the same as that given earlier in the *Hortus Cliffortianus* (p. 405), except that the long description given in the earlier work is omitted. In both places an unidentifiable Madagascan plant described by Vaillant is mentioned, but the lengthy description in the earlier work is based on a specimen in the *Hortus Cliffortianus* (now in the British Museum) of *Vernonia schiedeana*, collected at Veraacruz by Hous-toun and sent to Linnaeus by Philip Miller, and this plant is clearly to be taken as the type of the Linnaean name. Photographs of the type specimens of both *C. tortuosa* and *C. scandens* are now in the National Herbarium.

***Isocarpha microcephala* (DC.) Blake.**

Dunantia microcephala DC. Prodr. 5: 627. 1836.

Isocarpha divaricata Benth. Bot. Voy. Sulph. 110. pl. 41. 1844.

De CandoUe's attribution of this species to Mexico was erroneous. Haenke's plant was undoubtedly collected in Peru.

***Verbesina parviflora* (H. B. K.) Blake.**

Helianthus parviflorus H. B. K. Nov. Gen. & Sp. 4: 222. Pl. 378. 1820.

Actinomeris stricta Hemsl. Biol. Centr. Amer. Bot. 2: 186. 1881.

Verbesina stricta A. Gray, Proc. Amer. Acad. 19: 13. 1883.

The type of *Helianthus parviflorus* is a specimen of the common *Verbesina stricta* in which the main axis has been injured and has thrown off two long 1-headed branches, as faithfully depicted in plate 378 of the "Nova Genera et Species."

***Blennosperma nanum* (Hook.) Blake.**

Chrysanthemum ? *nanum* Hook. Fl. Bor. Amer. 1: 320. 1834.

Coniothele californica DC. Prodr. 5: 531. 1836.

Blennosperma californicum Torr. & Gray, Fl. N. Amer. 2: 272. 1842.

Hooker's name was long ago referred by Gray² to *Blennosperma californicum*, but has been overlooked by later authors.

***Liabum hypoleucum* (DC.) Blake.**

Vernonia hypoleuca DC. Prodr. 5: 27. 1836.

Based on a plant said to have been collected in Mexico by Haenke, but probably, like some other Asteraceae so attributed, a Peruvian species.

—S. F. Blake.

¹Journ. Bot. Brit. & For. 36: 52. 1898.

²Syn. Fl. 12: 364. 1884.

TWO GENERA OF ASTERACEAE NEW TO THE UNITED STATES.

Among Asteraceae from the southwestern United States recently identified by the writer are two Mexican species which add two generic as well as specific names to the United States list. Several extensions of range for plants of this family south of the Mexican border, and from Baja California to the mainland of Mexico, may also be placed on record here. All the specimens mentioned are in the U. S. National Herbarium.

EGLETES VISCOSA (L.) Less. A specimen collected in an estuary near Brownsville, Texas, 1-5 Aug. 1921, by Roxana S. Ferris and Carl D. Duncan (No. 3123) is in the National Herbarium. This species is known from Tamaulipas and Sinaloa southward into Central and South America, so that its occurrence in extreme southern Texas is not surprising. No true member of the genus, however, has been recorded from the United States hitherto.

TITHONIA THURBERI A. Gray. The collection of this species in Baboquivari Canyon, Papago Indian Reservation, Arizona, about 25 miles north of the Mexican border, by Dr. T. H. Kearney (No. 411), on 11 Oct. 1925, affords what seems to be the first record for any species of the genus in the United States. *Tithonia thurberi* was included by Dr. Gray in the Synoptical Flora more than forty years ago, but only on the strength of its occurrence at Magdalena, Sonora, some 50 miles south of the United States border. The species has previously been known from only two collections, one Dr. Gray's type, collected by George Thurber at Magdalena, Sonora, in 1851, the other a collection made by Palmer in 1890 at Alamos, Sonora, on which was based the name *Tithonia palmeri* Rose.

HOFMEISTERIA LAPHAMIOIDES Rose. This species, hitherto known only from Baja California and its islands, was collected at Kino Point, Sonora, 20 March 1926, by Miss Frances Long (No. 80).

MALPERIA TENUIS S. Wats. The first record of this rare species of California and Baja California in continental Mexico is afforded by a luxuriant specimen collected at North Libertad Bay, Sonora, 21 March 1926, by Miss Frances Long. The corollas, in this comparatively fresh specimen, are clearly ochroleucous.

MONOPTILON BELLIOIDES (A. Gray) Hall. This species has not been recorded from Mexico. There is a sheet in the National Herbarium collected at Libertad, Sonora, in 1875 by Dr. Streets, and recently specimens have been received collected by Dr. Forrest Shreve and Miss Frances Long at the same locality in March, 1926.

DISSODIA CONCINNA (A. Gray) Robinson. This species, hitherto known only from Arizona, was collected at Venugo, Sonora, 21 March 1926, by Miss Frances Long.

CALYCOSERIS WRIGHTII A. Gray. Collected between Mesquite and Altar, Sonora, 17 March 1926, by Miss Frances Long. It is recorded by Hemsley (Biol. Contr. Amer. Bot. 2: 261. 1881) from "Sonora and along the Rio Grande (*Smith*). Hb. Kew."

—S. F. Blake.

LENNOA CAERULEA IN COLOMBIA.

The small family of root parasites known as the Lennoaceae, consisting of 3 genera and 4 species, has hitherto been known only from the desert regions of southern California, Lower California, and Mexico (south to Puebla). Hemsley (Biol. Centr. Amer. Bot. 4: 254. 1887) states that "there is no other order of parasitical plants so restricted in area." The occurrence of a species of *Lennoa* in Colombia is therefore of considerable interest. In the National Herbarium is a sheet of flowering and fruiting specimens collected around Río Frío, State of Magdalena, Colombia, between the Ciénaga de Santa Marta and the foothills, alt. 0-100 meters, 22 June 1906, by Henry Pittier (No. 1579), which I am unable to distinguish by any characters of flower, fruit, or habit from material of *Lennoa caerulea* (H. B. K.) Fourn. Mr. Pittier's field notes ("rhizophyte, on large yellow-flowered *Tribulus*; plant brown, in large tufts; corolla deep lilac"), apply so well to the specimens that any possibility of error in the association of specimens and data during mounting is eliminated.

The Mexican specimens of *L. caerulea* in the National Herbarium are recorded as parasitic on *Tridax coronopifolia* and on *Boerhaavia*, those of *L. madreporoides* Llave and Lex. as growing on "various Compositae," and those of *Ammobroma sonora* Torr. on *Franseria dumosa* and *Dalea*. Jepson (Mán. Pl. Calif. 735. 1925) lists *Abronia*, *Erigonum*, *Eriodictyon*, and several *Asteraceae* as hosts of *Pholisma arenarium* Nutt. It is evident that, while the roots of *Asteraceae* are the usual hosts of the *Lennoaceae*, those of other families may serve as well.

—S. F. Blake.

